

GOVERNMENT OF INDIA

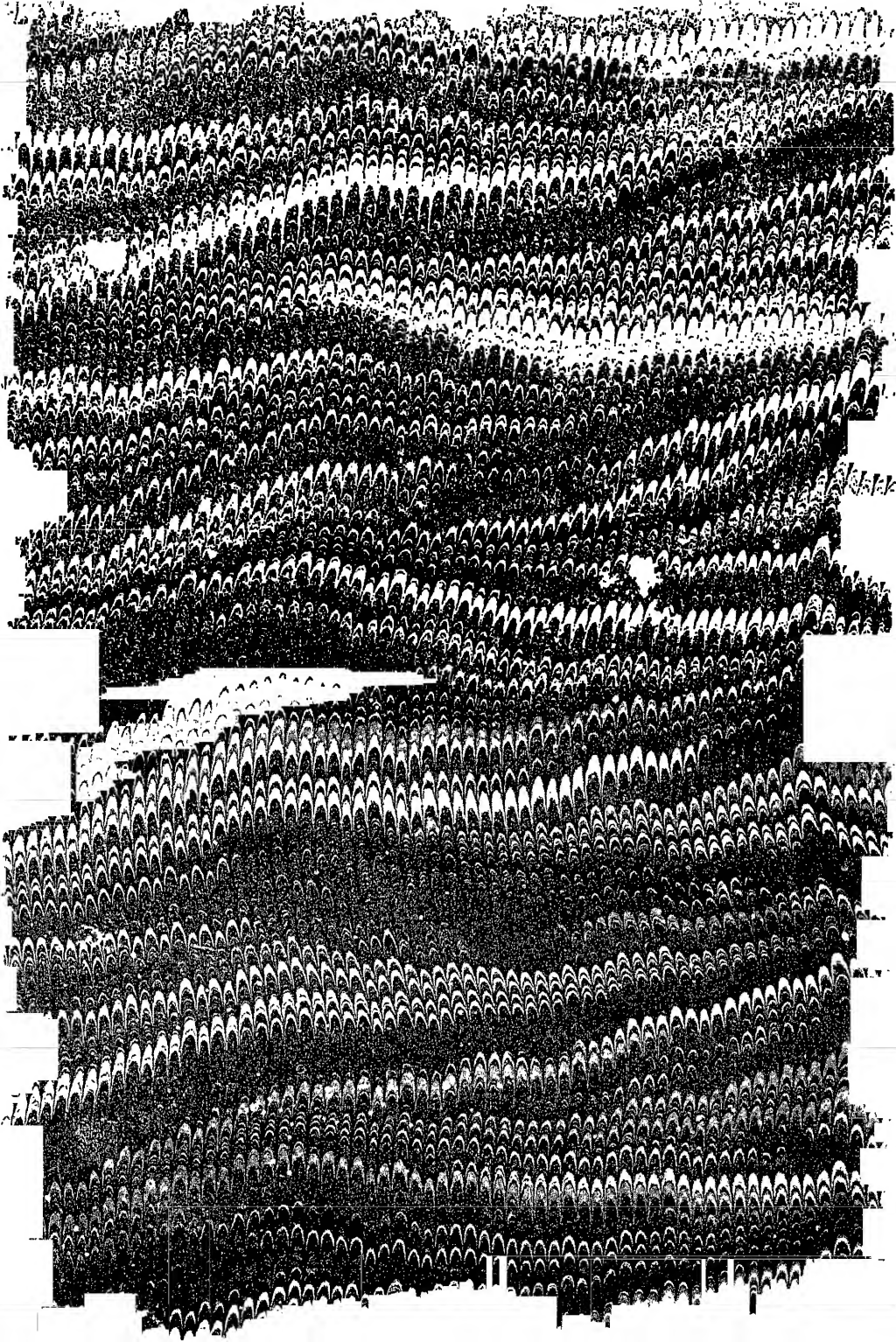
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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

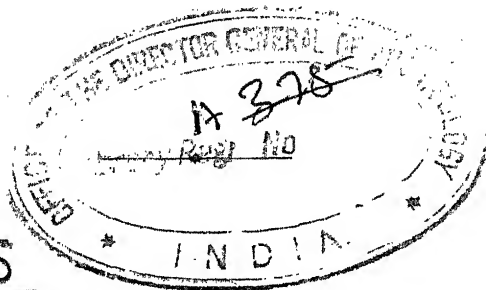
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JANUARY TO DECEMBER,

1883.



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P.A.S.B.

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ERRATUM.



Page 78, line 1, for Pearce, read Pearse.

[APPENDIX.]

LIST OF MEMBERS
OF THE
ASIATIC SOCIETY OF BENGAL,
ON THE 31ST DECEMBER, 1882.

LIST OF ORDINARY MEMBERS.

R. = Resident. N. R. = Non-Resident. N. S. = Non-Subscribing.
L. M. = Life Members. F. M. = Foreign Members.

N. B.—Members who have changed their residence since this list was drawn up are requested to give intimation of such a change to the *Secretaries*, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Secretaries.

Members who are about to leave India and do not intend to return are particularly requested to notify to the *Secretaries* whether it is their desire to continue members of the Society; otherwise, in accordance with Rule 40 of the Bye-Laws, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1860 Dec. 5.	R.	Abdul-Latif, Khán Bahádur, Nawab, C. I. E. <i>Calcutta.</i>
1868 Sept. 2.	N.S.	Adam, R. M., Depy. Commissioner, Salt Revenue. <i>Europe.</i>
1860 July 4.	N.R.	Ahmad Khán Bahádur, Sayyid, C. S. I. <i>Aligarh.</i>
1872 April 3.	N.R.	Ahsan-ullah, Nawáb. <i>Dacca.</i>
1860 April 4.	N.S.	Aitchison, J. E. T., M. D., Surgeon-Major, 29th N. I. <i>Europe.</i>
1882 May 3.	N.R.	Alijah Amir-ul-Mulk Syed Mahomed Siddeek Hassan, H. H. Nawab, Khan Bahadur. <i>Bhopal.</i>
1878 Mar. 6.	N.S.	Allen, G. W., C. I. E. <i>Europe.</i>
1874 June 3.	R.	Amír Alí, Sayyid, Barrister-at-Law. <i>Calcutta.</i>
1882 Mar. 1.	R.	Amír Hussain, Syed, Khan Bahadur. <i>Calcutta.</i>
1865 Jan. 11.	R.	Anderson, John, M. D., F. R. S., F. L. S., Superintendent, Indian Museum. <i>Calcutta.</i>
1875 Feb. 3.	N.R.	Armstrong, J., Surgeon, Beng. Army. <i>Etawah.</i>
1871 Sept. 6.	N.S.	Atkinson, Edwin Felix Thomas, B. A., C. S., Acct.-General. <i>Europe.</i>
1869 Feb. 3.	N.R.	Attar Singh Bahádur, Sirdár, C. I. E., M. V. F., Chief of Bhadour. <i>Ludiana.</i>
1870 Feb. 2.	N.R.	Baden-Powell, Baden Henry, C. S., Conservator of Forests. <i>Lahore.</i>
1873 Aug. 6.	N.S.	Badgley, Major William Francis, S. C., Offg. Deputy Superintendent of Surveys. <i>Europe.</i>
1862 Feb. 5.	N.R.	Baisák, Gaurdás, Deputy Magistrate. <i>Maldah.</i>
1859 Aug. 3.	R.	Balaichand Siñha. <i>Calcutta.</i>
1865 Nov. 7.	N.S.	Ball, Valentine, M. A., F. R. S., F. G. S., Trinity College, <i>Dublin.</i>

Date of Election.		
1860 Nov. 1.	R.	Banerjea, Rev. Kristo Mohun, LL. D. <i>Calcutta.</i>
1882 Aug. 31.	R.	Barclay, Arthur, M. B., Surgeon, Bengal Medical Service. <i>Calcutta.</i>
1869 Dec. 1.	L.M.	Barker, R. A., M. D., Civil Surgeon. <i>Nya Dumka, Santhal Pergunnahs.</i>
1879 Aug. 28.	N.R.	Barkley, D. G., M. A., c. s., Offg. Commissioner. <i>Lahore.</i>
1881 Aug. 3.	N.R.	Barstow, Henry Clements, c. s., Magistrate and Collector. <i>Cawnpore.</i>
1859 May 4.	L.M.	Bayley, The Hon'ble Sir Edward Clive, B. C. S., K.C.S.I., C. I. E. <i>Europe.</i>
1878 June 5.	R.	Bayley, C. S., c. s., Offg. Under-Secretary to the Govt. of Bengal. <i>Calcutta.</i>
1873 Feb. 5.	R.	Bayne, R. R., M. E. I. B. A., Draughtsman, Chief Engineer's Office, E. I. Railway. <i>Calcutta.</i>
1864 Sept. 7.	N.R.	Beames, John, B. C. S., Offg. Commissioner, Burdwan Division. <i>Chinsurah.</i>
1878 Sept. 25.	N.R.	Beighton, T. D., c. s., Offg. Judge. <i>Burdwan.</i>
1881 Mar. 2.	N.R.	Benett, W. C. <i>Cawnpore.</i>
1862 Oct. 8.	N.R.	Bernard, Charles Edward, c. s., Offg. Chief Commissioner. <i>B. Burmah.</i>
1872 Aug. 7.	N.S.	Beverley, Henry, M. A., c. s., District and Sessions Judge, 24-Pergunnahs and Hugli. <i>Europe.</i>
1876 Nov. 15.	N.R.	Beveridge, Henry, c. s., District and Sessions Judge. <i>Patna.</i>
1878 Oct. 4.	R.	Bhakta, Krishna Gopal. <i>Calcutta.</i>
1879 Mar. 5.	N.R.	Biddulph, Major J., B. S. C. <i>Sirdarpur, Mhow, C. I.</i>
1875 July 7.	N.R.	Black, F. C., Asst. Engineer. <i>Jhansi, N. W. P.</i>
1857 Mar. 4.	L.M.	Blanford, H. F., A. R. S. M., F. R. S., F. G. S., Meteorological Reporter, Govt. of India. <i>Calcutta.</i>
1859 Aug. 3.	L.M.	Blanford, W. T., A. R. S. M., F. R. S., F. G. S., F. R. G. S., F. Z. S. <i>Europe.</i>
1873 April 2.	N.R.	Blisset, T., Superintendent, Telegraph Stores. <i>Kurrachee.</i>
1879 Aug. 28.	R.	Blyth, W. D., B. A., c. s., Under-Secretary to the Govt. of Bengal. <i>Calcutta.</i>
1880 Nov. 3.	N.R.	Bose, Pramatha Nath, B. Sc., F. G. S., Geological Survey of India. <i>Camp, Mandhatta, Nimar, C. P.</i>
1877 May 2.	R.	Bourdillon, James Austin, c. s., Inspector-General of Registration. <i>Calcutta.</i>
1876 Nov. 15.	N.R.	Bowie, Major M. M., Depy. Commissioner. <i>Nagpur.</i>
1868 Jan. 15.	N.R.	Boxwell, John, c. s. <i>Darbhanga.</i>
1876 May 4.	N.S.	Bradshaw, Brigade-Surgeon A. F. <i>Europe.</i>
1860 Mar. 7.	N.R.	Brandis, Dietrich, PH. D., F. L. S., F. R. S., Inspector-General of Forests. <i>Madras.</i>
1879 Jan. 8.	R.	Browne, J. F., c. s., M. B. A. S., Offg. District and Sessions Judge, 24-Pergunnahs. <i>Calcutta.</i>

Date of Election.		
1879 April 2.	R.	Calcutta, The Rt. Rev. the Lord Bishop of. <i>Calcutta.</i>
1869 Jan. 20.	N.R.	Cadell, Alan, B. A., C. S., Magistrate. <i>Mirzapore.</i>
1873 Mar. 5.	N.S.	Cappel, A. J. L., Offg. Director General of Telegraphs. <i>Europe.</i>
1880 Mar. 3.	N.R.	Carlley, A. C., Archæological Survey of India. <i>Mirzapur.</i>
1881 Feb. 2.	N.R.	Carter, Philip John, Depy. Conservator of Forests. <i>Rangoon.</i>
1876 Nov. 15.	R.	Cayley, Surgeon-Major H., Surgeon, Mayo Native Hospital. <i>Calcutta.</i>
1882 May 3.	R.	Chalmers, James B., C. E. <i>Calcutta.</i>
1881 Mar. 2.	N.R.	Channing, Francis Chorley, B. C. S. <i>Lahore.</i>
1879 Nov. 5.	N.S.	Charles, T. E., M. D., F. R. C. P. <i>Europe.</i>
1881 Mar. 2.	N.R.	Chatterji, Bhairab Chunder, <i>Jessore.</i>
1880 May 5.	N.R.	Chatterji, Tara Prasada. <i>Bishnupur, Zila Bankura.</i>
1880 Jan. 7.	R.	Chaudhuri, Govinda Kumara. <i>Calcutta.</i>
1861 Mar. 1.	N.R.	Chaudhuri, Harachandra, Zamindar. <i>Sherpur, Maimansingh.</i>
1880 Nov. 3.	N.R.	Chaudhuri, Khirode Chandra Roy, Head Master, Collegiate School. <i>Krishnagar.</i>
1874 Aug. 5.	N.R.	Chennell, A. W., Asst. Surveyor, Survey Department. <i>Shillong.</i>
1881 Mar. 2.	R.	Chunder, Sreenath. <i>Calcutta.</i>
1877 Aug. 30.	N.S.	Clarke, Major Henry Wilberforce, B. E. <i>Europe.</i>
1878 Feb. 6.	N.S.	Clarke, Colonel Sir A., B. E., K. C. M. G., C. B., C. I. E. <i>Europe.</i>
1880 Aug. 26.	F.M.	Clerk, Lieut.-Colonel Malcolm G. <i>Europe.</i>
1881 May 4.	N.R.	Cockburn, John, Asst. Sub-Depy Opium Agent. <i>Ohunar.</i>
1874 Nov. 4.	N.R.	Constable, Archibald, Resident Engineer and Personal Asst. to Chief Engineer, Oudh and Rohilkund Railway. <i>Lucknow.</i>
1881 Mar. 2.	N.R.	Cook, Capt. L. A. C. <i>Jamrud.</i>
1876 Mar. 1.	N.R.	Crawford, James, B. A., C. S., Barrister-at-Law, Offg. District and Sessions Judge. <i>Maimansingh.</i>
1877 June 6.	R.	Croft, A. W., M. A., Director of Public Instruction. <i>Calcutta.</i>
1874 Mar. 4.	N.R.	Crombie, Alexander, M. D., Civil Surgeon. <i>Dacca.</i>
1877 Feb. 7.	N.R.	Crooke, William, C. S. <i>Awagarh, N. W. P.</i>
1873 Aug. 6.	N.S.	Cunningham, David Douglas, M. D., Professor, Medical College. <i>Europe.</i>
1873 Dec. 3.	F.M.	Dames, Mansel Longworth, C. S., Asst. Commissioner. <i>Europe.</i>
1877 June 6.	N.R.	Darbhanga, Mahárájá of. <i>Darbhanga.</i>

Date of Election.		
1865 June 7.	N.R.	Dás, Rájá Jaykishan, Bahádur, c. s. i. <i>Bijnor.</i>
1879 April 2.	N.R.	Dás, Rám Saran, M. A. <i>Rámsarandáspúr, near Bur-ragaon, Fyzabad, Oudh.</i>
1869 April 7.	F.M.	Day, Dr. Francis, F. L. S., F. Z. S. <i>Europe.</i>
1856 June 4.	R.	DeBourbel, Lieut.-Col. Raoul, E. E., Consulting Engineer to the Govt. of India for Guaranteed Railways. <i>Calcutta.</i>
1859 Oct. 6.	N.R.	Delmerick, J. G., Extra Asst. Commissioner. <i>Am-bala City.</i>
1862 May 7.	N.R.	Dhanapati Singh Dughar, Raí Bahádur. <i>Azamganj.</i>
1880 Dec. 1.	N.R.	Dilawar Hasein Ahmad, Maulawi. <i>Brahmanbariah.</i>
1877 July 4.	R.	Diler Jang, Nawáb Syad Ashgar Alí, Khan Bahádur, c. s. i. <i>Calcutta.</i>
1875 Mar. 3.	R.	Douglas, J., Supdt. of Telegraph Stores. <i>Alipore.</i>
1882 Mar. 1.	N.R.	Douie, J. M., c. s., Settlement Officer. <i>Karnal, Panjab.</i>
1879 Feb. 5.	N.R.	Duthie, J. F., Superintendent, Govt. Botanical Gardens. <i>Saharunpore.</i>
1877 Aug. 30.	N.R.	Dutt, Kedarnath, Depy. Magte. and Depy. Collector. <i>Baraset, 24-Pergunnahs.</i>
1873 April 2.	R.	Dutt, Omesh Chunder. <i>Calcutta.</i>
1881 Mar. 2.	F.M.	Eden, The Hon'ble Sir Ashley, K. C. S. I., C. I. E. <i>Europe.</i>
1870 Mar. 8.	L.M.	Edinburgh, H. R. H. The Duke of. <i>Europe.</i>
1863 May 6.	R.	Edgar, John Ware, c. s., c. s. i., Offg. Commissioner, Presidency Division. <i>Calcutta.</i>
1879 Mar. 5.	R.	Eetvelde, E. van, Consul-General for Belgium. <i>Calcutta.</i>
1874 Dec. 2.	N.S.	Egerton, The Hon. Sir Robert Eyles, c. s., K. C. S. I., C. I. E. <i>Europe.</i>
1880 April 7.	N.R.	Elias, Ney, Joint Commissioner. <i>Ladakh.</i>
1871 Dec. 2.	R.	Eliot, J., M. A., Meteorological Reporter to the Govt. of Bengal. <i>Calcutta.</i>
1871 Oct. 4.	N.R.	Evezard, Major-General G. E. <i>Blair Athol, Coonoor, Nilgiri Hills.</i>
1859 Dec. 7.	R.	Fath Ali, Maulawi. <i>Calcutta.</i>
1863 Jan. 15.	N.R.	Fedden, Francis, Asst., Geological Survey of India. <i>Camp, via Bhavnagar P. O., Kattywar.</i>
1876 Jan. 5.	R.	Feistmantel, Ottokar, M. D., Palæontologist, Geological Survey of India. <i>Calcutta.</i>
1880 April 7.	N.R.	Fiddian, W., M. A., c. s., Offg. Magistrate and Collector. <i>Bakarganj.</i>
1879 July 2.	N.R.	Finucane, M., c. s., Magistrate and Collector. <i>Darbhanga.</i>

Date of Election.		
1869 Sept. 1.	N.S.	Fisher, John Hadden, c. s. <i>Europe.</i>
1872 Dec. 4.	N.R.	Forbes, Lieut.-Col. John Greenlaw, R. E. <i>Allahabad.</i>
1876 July 5.	N.R.	Foulkes, The Rev. Thos., F. L. S., M. R. A. S., F. R. G. S., Chaplain. <i>Bangalore.</i>
1869 Sept. 1.	N.R.	Fryer, Lieut.-Col. G. E., Deputy Commissioner. <i>Maulmain, B. Burmah.</i>
1867 Sept. 4.	N.S.	Fyfe, The Rev. W. C., M. A., Principal, Free Church College. <i>Europe.</i>
1880 April 7.	N.R.	Gajapati, Ananda Ram, Raja of Vizianagram. <i>Vizianagram.</i>
1873 Dec. 3.	N.R.	Gamble, J. S., B. A., Conservator of Forests, Northern Circle. <i>Madras.</i>
1879 Mar. 5.	N.S.	Garrett, A. W., M. A., Inspector of Schools, Presy. Circle. <i>Australia.</i>
1859 Aug. 3.	L.M.	Gastrell, Major-General James Eardley (retired). <i>Europe.</i>
1867 Dec. 4.	N.R.	Gay, E., M. A., c. s., Accountant-General. <i>Bombay.</i>
1871 May 3.	R.	Ghosha, Káliprasanna. <i>Calcutta.</i>
1877 Dec. 5.	N.R.	Ghosha, Dr. Krishna Dhana. <i>Rangpur.</i>
1869 Feb. 3.	R.	Ghosha, Pratápchandra, B. A. <i>Calcutta.</i>
1870 May 4.	R.	Ghoshál, Rájá Satyánand. <i>Calcutta.</i>
1880 Aug. 4.	R.	Gibbs, The Hon. James, c. s. I., C. I. E., F. R. G. S., M. R. A. S., Member of the Governor-General's Council. <i>Calcutta.</i>
1875 July 7.	N.R.	Girdlestone, Charles Edward Ridgway, c. s., Resident. <i>Katmandu, Nepal.</i>
1861 Feb. 5.	F.M.	Godwin-Austen, Lieut.-Colonel H. H., F. R. S., F. Z. S., F. R. G. S. <i>Europe.</i>
1882 May 3.	N.R.	Golam Sarwar, Maulvi. <i>Calcutta.</i>
1862 July 2.	N.R.	Gordon, Robert, c. E., Executive Engineer, P. W. D. <i>Henzada, B. Burmah.</i>
1881 Mar. 2.	R.	Gosain, Hem Chunder. <i>Calcutta.</i>
1863 Nov. 4.	F.M.	Gowan, Major-General J. Y. <i>Europe.</i>
1879 Jan. 8.	N.R.	Gowan, Major W. E. <i>Simla.</i>
1877 Nov. 7.	L.M.	Grant, Alexander, M. I. C. E., Director of State Railways. <i>Europe.</i>
1876 Nov. 15.	N.R.	Grierson, George Abraham, c. s., Offg. Magistrate. <i>Patna.</i>
1861 Sept. 4.	N.R.	Griffin, Sir Lepel Henry, c. s., K. C. S. I., Resident. <i>Indore.</i>
1878 May 2.	N.R.	Griffith, R., M. A., Director of Public Instruction, N. W. P. and Oudh. <i>Allahabad.</i>
1861 Feb. 6.	N.R.	Growse, Frederick Salmon, M. A., c. s., C. I. E., Magistrate and Collector. <i>Bulandshahr, N. W. P.</i>
1880 Feb. 4.	R.	Gupta, Behárilál, c. s. <i>Calcutta.</i>

Date of Election.		
1867 July 3.	N.S.	Hacket, Charles Augustus, Assistant, Geol. Survey of India. <i>Europe.</i>
1879 Mar. 5.	R.	Harraden, S. <i>Calcutta.</i>
1877 Sept. 27.	R.	Hart, J., Attorney-at-Law. <i>Calcutta.</i>
1875 Mar. 3.	N.R.	Hendley, Surgeon Major Thomas Holbein, Residency Surgeon. <i>Taipur, Rájputáná.</i>
1879 Mar. 5.	N.S.	Herschel, Major J., R. E., F. R. S., Survey of India. <i>Europe.</i>
1875 Aug. 4.	N.R.	Hewitt, James Francis Katherinus, c. s., Commissioner. <i>Chota Nagpur.</i>
1872 Dec. 4.	R.	Hoernle, Rev. A. F. R., PH. D., Offg. Principal of the Madrasah. <i>Calcutta.</i>
1878 Mar. 6.	F.M.	Hoey, W. <i>Europe.</i>
1873 Jan. 8.	L.M.	Houstoun, G. L., F. G. S. <i>Europe.</i>
1863 Jan. 15.	N.R.	Howell, Mortimer Sloper, c. s. <i>Shahjehanpur.</i>
1878 Sept. 25.	N.S.	Hughes, G., c. s., Assistant Commissioner, Panjab. <i>Europe.</i>
1867 Aug. 7.	F.M.	Hughes, T. H., A. R. S. M., F. G. S., Geol. Survey of India. <i>Europe.</i>
1866 Jan. 17.	N.R.	Hughes, Major W. G., M. S. C. <i>Tavoy, B. Burmah.</i>
1870 Jan. 5.	N.R.	Hume, Allan Octavian, C. B., C. S. <i>Allahabad.</i>
1872 Dec. 4.	N.R.	Ibbetson, Denzil Charles Jelf, c. s., Deputy Commissioner of the Punjab Census. <i>Lahore.</i>
1866 Mar. 7.	N.R.	Irvine, William, c. s., Magistrate and Collector. <i>Ghazipur.</i>
1871 Mar. 8.	N.S.	Isaac, T. S., c. E. <i>Europe.</i>
1853 Dec. 7.	N.R.	Isvariprasad Singh, Maharaja, K. G. C. S. I. <i>Benares.</i>
1874 Feb. 4.	R.	Jackson, Surgeon Major Charles Julian. <i>Calcutta.</i>
1878 May 2.	N.S.	Jackson, Sir L. S. <i>Europe.</i>
1880 Dec. 1.	N.R.	Jackson, William Grierson, B. C. S. <i>Mirzapur, N. W. P.</i>
1869 Aug. 4.	R.	Jahán Qadr Muhammad Wáhid Alí, Bahádur, Prince. <i>Garden Reach.</i>
1876 July 5.	N.S.	Jarrad, Lieut. F. W., R. N., F. R. A. S., Marine Survey Dept. <i>Hydrographic Office, Admiralty, London.</i>
1879 Mar. 5.	N.S.	Jarrett, Major H. S., B. S. C., Secy. to the Board of Examiners. <i>Europe.</i>
1881 Feb. 2.	N.R.	Jenkins, Capt. Thomas Morris, M. S. C., Asst. Commissioner and J. P. for Burmah. <i>Bassein.</i>
1862 Mar. 5.	N.R.	Johnstone, Lieut.-Colonel James William Hope, Commissioner. <i>Jallandhar.</i>
1867 Dec. 4.	N.R.	Johnstone, Lieut.-Col. James, Political Agent. <i>Manipur, via Cachar.</i>
1878 Aug. 7.	R.	Johnstone, P. DeLacy, c. s. <i>Calcutta.</i>

Date of Election.		
1873 Dec. 3.	N.R.	Johore, H. H. the Maharájá of, K. C. S. I. <i>New Johore, Singapore.</i>
1873 April 2.	N.S.	Jones, Frederick, C. S., Magte. and Collr. <i>Europe.</i>
1875 Nov. 3.	N.R.	Jones, Samuel Simpson, B. A., C. S., Asst. Commissioner, Deoghur Division. <i>Santhal Pergunnahs.</i>
1869 April 7.	R.	Kabíruddin Ahmad, Maulawí. <i>Calcutta.</i>
1882 Mar. 1.	R.	Kennedy, Pringle, M. A. <i>Calcutta.</i>
1874 Dec. 2.	N.R.	Khudábaksh, Khan Bahadur, Maulawí. <i>Patna.</i>
1867 Dec. 4.	R.	King, G., M. B., F. L. S., Supdt., Royal Botanic Garden. <i>Sibpur.</i>
1881 Mar. 2.	N.R.	King, Lucas White, B. A., LL. B., C. S., Sub-Divisional Magistrate. <i>Rajanpur.</i>
1862 Jan. 15.	N.S.	King, W., Jr., B. A., F. G. S., Depy. Supdt. for Madras, Geol. Survey of India. <i>Europe.</i>
1880 Dec. 1.	N.R.	Kirton, Surgeon-Major William Henry, F. L. S., Medical Store-Keeper. <i>Meean Meer, Panjab.</i>
1880 Jan. 7.	N.S.	Kisch, H. M., M. A., C. S. <i>Europe.</i>
1877 Jan. 17.	N.R.	Kishor, Kumara Radha Dev, Juvráj of Hill Tipperah. <i>Tipperah.</i>
1882 June 7.	N.R.	Kishore Singh, Maharaja Kumar Harendra. <i>Bettiah.</i>
1878 Oct. 4.	N.R.	Lachman Singh, Raja. <i>Bulandshahr.</i>
1877 Sep. 27.	N.R.	La Touche, James John Digges, B. A., C. S. <i>Banda.</i>
1881 Feb. 2.	N.S.	Laughlin, Robert Campbell, Asst. Supdt., Govt. Telegraph Department. <i>Europe.</i>
1878 Aug. 7.	N.R.	Lawrie, Dr. E. <i>Lahore.</i>
1881 Mar. 2.	R.	Lee, J. Bridges, M. A., F. G. S., F. C. S., F. Z. S., Barrister-at-Law. <i>Calcutta.</i>
1879 Dec. 3.	N.R.	Leonard, G. S., Asst. Traffic Supdt., N. B. State Ry. <i>Saidpur.</i>
1879 Mar. 5.	R.	Levinge, H. C., C. E., Offg. Secy. to the Govt. of Bengal, P. W. D. <i>Calcutta.</i>
1880 July 7.	N.R.	Lewis, Rev. Arthur. B. A. <i>Dera Ghazi Khan.</i>
1873 Feb. 5.	R.	Lewis, Timothy Richards, M. B., Special Asst. to the Sanitary Commissioner with the Government of India. <i>Calcutta.</i>
1881 Dec. 7.	R.	Logan, R., C. S. <i>Calcutta.</i>
1866 Jan. 17.	F.M.	Low, James, Surveyor, G. T. Survey (retired). <i>Europe.</i>
1869 July 7.	N.R.	Lyall, Charles James, B. A., C. S., Offg. Secy. to the Chief Commissioner of Assam. <i>Shillong.</i>
1875 Jan. 6.	N.S.	Lydekker, Richard, Asst., Geol. Survey of India. <i>Europe.</i>
1870 April 6.	L.M.	Lyman, B. Smith. <i>Northampton, Mass., U. S., America.</i>

Date of Election.		
1880 Dec. 1.	R.	M'Cann, H. W., M. A., D. SC., Professor, Presidency College. <i>Calcutta</i> .
1868 Dec. 2.	N.R.	Macauliffe, Michael, B. A., C. S., Judicial Asst. <i>Gurdaspur</i> .
1880 June 2.	F.M.	Macdonald, James, C. E. <i>Europe</i> .
1879 Feb. 5.	N.S.	Macgregor, Major C. R., 44th N. I. <i>Europe</i> .
1876 Jan. 5.	N.R.	Macgregor, W., Superintendent, Telegraphs. <i>Dhubri, Assam</i> .
1848 April 5.	L.M.	MacLagan, Major-General Robert, R. E., F. R. S. E., F. R. G. S. <i>Europe</i> .
1873 Dec. 3.	R.	MacLeod, Surgeon-Major Kenneth, M. D. <i>Calcutta</i> .
1880 May 5.	N.R.	MacLeod, Roderick Henry, B. C. S., Asst. Magistrate. <i>Kasia, Gorakhpur, N.-W. P.</i>
1879 Aug. 28.	N.S.	Maconachie, R., C. S., Settlement Secy. to the Financial Commissioner. <i>Europe</i> .
1881 July 6.	R.	Mahomed Firukh Shah, Prince. <i>Calcutta</i> .
1880 Aug. 26.	N.R.	Mahomed Hassan, Khalif Syad, Khan Bahádur, Prime Minister. <i>Puttiala</i> .
1882 Aug. 2.	R.	Mahomed Yusoof, Hon. Moulvie. <i>Calcutta</i> .
1867 April 3.	R.	Mainwaring, Major-General George Byres, S. C. <i>Se-rampur</i> .
1878 April 3.	R.	Mallet, F. R., Geological Survey of India. <i>Calcutta</i> .
1864 July 6.	R.	Mallik, Coomar Devendra. <i>Calcutta</i> .
1869 Sept. 1.	R.	Mallik, Yadulál. <i>Calcutta</i> .
1872 Nov. 6.	N.R.	Man, E. H., Asst. Supdt. <i>Port Blair, Andamans</i> .
1880 May 5.	N.R.	Mandalik, The Hon. Rao Sahib Visvanath Narayana, C. S. I. <i>Bombay</i> .
1869 July 7.	N.R.	Markham, Alexander Macaulay, C. S. <i>Rai Bareli, Oudh</i> .
1873 July 2.	N.R.	Marshall, C. W. <i>Berhampur, Bengal</i> .
1877 Feb. 7.	R.	Marshall, Major Geo. Fréd. Leycester, R. E., Asst. Secy., Govt. of India, P. W. D. <i>Calcutta</i> .
1860 Mar. 7.	R.	Medlicott, H. B., M. A., F. R. S., F. G. S., Supdt., Geological Survey of India. <i>Calcutta</i> .
1877 Mar. 7.	N.R.	Medlycott, The Rev. Adolphus Edwin, PH. D., Military Chaplain. <i>Ferozepur, Panjab</i> .
1871 Sept. 6.	F.M.	Miles, Lieut.-Colonel S. B., S. C., H. M. Agent to Consul General. <i>Zanzibar</i> .
1870 July 6.	R.	Miller, A. B., B. A., Barrister-at-Law, Official Assignee. <i>Calcutta</i> .
1874 May 6.	N.R.	Minchin, F. J. V. <i>Aska, Ganjam</i> .
1875 Aug. 4.	N.R.	Minchin, Colonel C. C. <i>Hissar, Panjab</i> .
1856 Mar. 5.	R.	Mitra, Rájendralála, Rái Bahádur, LL. D., C. I. E. <i>Calcutta</i> .
1876 Dec. 6.	F.M.	Mockler, Major E., Asst. Political Agent. <i>Busrah, Persian Gulf</i> .
1874 July 1.	N.S.	Molesworth, G. L., C. E., Consulting Engineer to Govt. of India for State Railways. <i>Europe</i> .
1881 May 4.	N.R.	Molloy, Major Edward, 5th Goorkhas. <i>Abbotabad, Hazara, Panjab</i> .

Date of Election.		
1881 Dec. 7.	N.R.	Monteath, J. J., M. D. <i>Silchar.</i>
1878 May 2.	N.R.	Moyle, J. C., Barrister-at-Law. <i>Moulmein, Burmah.</i>
1864 Nov. 2.	N.R.	Mukerjea, The Hon. Bhudeva, Inspector of Schools. <i>Chinsurah.</i>
1879 May 7.	N.R.	Muir, J. W., M. A., C. S., Barrister-at-law. <i>Meerut, N.-W. P.</i>
1867 Mar. 6.	R.	Mukerjea, The Hon. Pearimohan, M. A. <i>Uttarpara.</i>
1882 Jan. 4.	R.	Mukerji, Girijabhushan, M. A. <i>Calcutta.</i>
1880 Aug. 26.	R.	Mullick, Benod Behari. <i>Calcutta.</i>
1880 Aug. 26.	N.R.	Nag, Sib Chunder. <i>Chittagong.</i>
1880 Dec. 1.	R.	Napier, J. R. <i>Calcutta.</i>
1882 Aug. 2.	N.R.	Narain Singh, Raja Ram. <i>Khyrah, Monghyr.</i>
1876 May 4.	R.	Nash, A. M., M. A., Professor, Presidency College. <i>Calcutta.</i>
1865 Feb. 1.	R.	Nevill, G., C. M. Z. S., Indian Museum. <i>Calcutta.</i>
1881 Nov. 2.	R.	Nicéville, L. de. <i>Calcutta.</i>
1880 Aug. 26.	N.R.	Nicholson, Richardson Walter, Sub-Deputy Opium Agent. <i>Sultampur, Oudh.</i>
1869 July 7.	N.R.	Nursing Rao, A. V. <i>Vizagapatam.</i>
1871 July 5.	N.S.	Oates, E. W., C. E., Engineer, P. W. D., Garrison Div., Sittang Canal. <i>Europe.</i>
1874 Oct. 4.	R.	O'Kinealy, The Hon'ble James, C. S., District and Sessions Judge, 24-Pergunnahs. <i>Calcutta.</i>
1879 Aug. 28.	N.R.	Oldham, Surgeon-Major C. F., F. R. G. S. <i>Dhurmsala, Panjab.</i>
1880 Dec. 1.	N.R.	Oldham, R. D., A. R. S. M., Asst., Geological Survey of India. <i>Chakrata.</i>
1873 Aug. 6.	N.R.	Olpherts, W. G., C. E., Manager, Kaharbari Collieries. <i>Giridhi, E. I. R.</i>
1880 Aug. 4.	L.M.	Pandia, Pandit Mohanlall Vishnulall, F. T. S., Member and Secy., Royal Council of Meywar. <i>Oodeypur.</i>
1880 Jan. 7.	R.	Pargiter, Frederick E., B. A., C. S., Officiating Commissioner of the Sunderbunds. <i>Calcutta.</i>
1873 Aug. 6.	R.	Parker, J. C. <i>Calcutta.</i>
1880 Jan. 7.	N.R.	Parry, J. W., C. E., ASSOC. M. I. C. E., Asst. Engineer, <i>Bhiwani, via Delhi.</i>
1862 May 7.	L.M.	Partridge, Surgeon-Major Samuel Bowen, M. D. <i>Europe.</i>
1879 Mar. 5.	N.S.	Pawsey, R., C. S., Collector. <i>Europe.</i>
1871 Dec. 6.	N.R.	Peal, S. E. <i>Aideo, via Sonari.</i>
1860 Feb. 1.	N.R.	Pearse, Major-General G. G., C. B., R. H. A. <i>Bangalore.</i>

Date of Election.		
1873 Aug. 6.	R.	Pedler, Alexander, F. C. S., Professor of Chemistry, Presidency College. <i>Calcutta.</i>
1864 Mar. 2.	N.S.	Pellew, Fleetwood Hugo, C. S., Offg. Commissioner. <i>Europe.</i>
1865 Sept. 6.	N.R.	Peppé, T. F. <i>Arrah.</i>
1881 Aug. 25.	R.	Percival, Hugh Melville, M. A., Professor, Presidency College. <i>Calcutta.</i>
1877 Aug. 1.	F.M.	Peters, O. T., M. B., Civil Surgeon. <i>Europe.</i>
1868 May 6.	R.	Peterson, F. W., H. M.'s Mint. <i>Calcutta.</i>
1835 July 1.	F.M.	Phayre, Sir Arthur Purves, K. C. S. I., C. B. <i>Europe.</i>
1872 Dec. 4.	R.	Pránnáth Sarasvati, Pandit, M. A., B. L. <i>Bhowanipur.</i>
1880 June 2.	N.R.	Prasad Sinh, Thakur Garuradhawaya, Raja of Beswan. <i>Beswan Fort, Aligarh.</i>
1877 Aug. 30.	N.R.	Pratapnarayan Singha, Depy. Magistrate. <i>Bankura.</i>
1881 Feb. 2.	R.	Prideaux, Major William Francis, B. S. C. <i>Calcutta.</i>
1878 Feb. 6.	R.	Prinsep, The Hon'ble H. T., Judge of the High Court. <i>Calcutta.</i>
1871 June 7.	R.	Ramkrishna. <i>Calcutta.</i>
1877 May 2.	N.S.	Ravenshaw, Thomas Edw., C. S. <i>Europe.</i>
1880 April 7.	R.	Rai, Bipina Chandra, B. L., Munsif. <i>Diamond Harbour.</i>
1868 April 1.	N.R.	Rái, Rájá Pramathanath. <i>Digapati.</i>
1877 Aug. 1.	N.R.	Rees, J. C., Asst. Engr., P. W. D. <i>Thonzai, British Burmah.</i>
1871 July 5.	N.R.	Reid, James Robert, C. S., Collector. <i>Bareilly, Rohilkund.</i>
1881 Mar. 2.	R.	Reynolds, The Hon. Herbert John, B. A., C. S. <i>Calcutta.</i>
1880 Aug. 4.	N.R.	Reynolds, Herbert William Ward, C. S. <i>Allahabad.</i>
1860 Jan. 3.	N.R.	Rivett-Carnac, John Henry, C. S., C. I. E., F. S. A., Opium Agent. <i>Ghazipur.</i>
1863 April 1.	F.M.	Robertson, Charles, C. S., Secretary to the Govt., N.-W. P. and Oudh. <i>Europe.</i>
1878 Sept. 25.	R.	Robertson, Rev. J. <i>Calcutta.</i>
1865 Feb. 1.	R.	Robinson, S. H. <i>Calcutta.</i>
1880 Sept. 30.	N.R.	Sage, E. M., Asst. Engineer., P. W. D. <i>Tavoy, British Burmah.</i>
1877 May 2.	N.R.	Sandford, W., Rajputana-Malwa Railway. <i>Ajmere, Rajputana.</i>
1870 May 4.	R.	Schlieb, Dr. W. <i>Calcutta.</i>
1879 May 7.	N.S.	Schroder, J. <i>Europe.</i>
1879 Feb. 5.	R.	Sconce, Lt.-Col. J., B. S. C. <i>Calcutta.</i>
1874 July 1.	R.	Scully, Dr. John. <i>Calcutta.</i>
1878 Mar. 6.	R.	Sen, Adharlal, B. A. <i>Calcutta.</i>
1874 Dec. 2.	N.R.	Sen, Dr. Rám Dás. <i>Berhampur.</i>

Date of Election.		
1882 June 7.	F.M.	Senart E'mile, Membre de l'Institut de France. <i>Paris.</i>
1882 Aug. 2.	R.	Serajul Islam, Moulvie. <i>Calcutta.</i>
1879 Jan. 8.	N.R.	Sewell, R., M. C. S. <i>Madras.</i>
1878 May 2.	R.	Sharpe, C. J. <i>Calcutta.</i>
1879 May 7.	N.R.	Sheridan, C. J., C. E., Dist. Engr. <i>Muzuffarnagar, N.-W. P.</i>
1881 Mar. 2.	N.R.	Shopland, E. R., Indian Marine, Port Officer. <i>Akyab.</i>
1882 May 3.	N.R.	Shyamaldass, Kavirāja, Private Secy. to H. H. the Mahārānā of Udaipur. <i>Udaipur.</i>
1878 April 3.	R.	Simson, A. <i>Calcutta.</i>
1867 April 3.	R.	Sirkār, Dr Mahendralāla. <i>Calcutta.</i>
1872 Aug. 7.	N.S.	Skræfstrud, Rev. L. O., India Home Mission to the Santhāls. <i>Europe.</i>
1864 Sept. 7.	N.R.	Sladen, Col. E. B., M. S. C. <i>Akyab.</i>
1874 June 3.	F.M.	Smith, Vincent Arthur, C. S., Asst. Settlement Officer. <i>Europe.</i>
1879 Mar. 5.	N.R.	Someren, Capt. G. J. van, Asst. Controller General, Forests. <i>Panjab.</i>
1872 July 3.	N.R.	Stephen, Carr, B. L., Judl. Asst. Commr. <i>Ludianah.</i>
1879 Oct. 2.	N.S.	Sterndale, R. A., F. R. G. S., Asst. Comr. of Currency. <i>Europe.</i>
1882 May 3.	R.	Stewart, H. E. Sir Donald M., Bart., G. C. B., G. C. S. I., Commander-in-Chief. <i>Calcutta.</i>
1878 July 3.	N.R.	St. Barbe, H. L., C. S., Supt., Rajputana State Railway Police. <i>Rajputana.</i>
1876 Aug. 2.	N.R.	St. John, Lieut.-Col. Sir Oliver Beauchamp, R. E., K. C. S. I., Officer on special duty. <i>Kashmir.</i>
1869 Feb. 3.	N.S.	Strachey, Sir J., K. C. S. I., C. I. E. <i>Europe.</i>
1880 Nov. 3.	N.R.	Sturt, Lieut. Robert Ramsay Napier, B. S. C., Panjab Frontier Force. <i>Edwardesabad, Panjab.</i>
1864 Aug. 11.	R.	Swinhoe, W., Attorney-at-Law. <i>Calcutta.</i>
1880 Nov. 3.	N.R.	Swynnerton, Rev. Charles. <i>Naushera.</i>
1880 June 2.	N.R.	Sykes, John Gastrell, LL.B., Barrister-at-Law and Advocate, High Court, N. W. P. <i>Allahabad.</i>
1868 June 3.	R.	Tagore, The Hon'ble Mahārājā Jotendra Mohun, K. C. S. I. <i>Calcutta.</i>
1865 Sept. 6.	N.S.	Tawney, C. H., M. A., Principal, Presidency College. <i>Europe.</i>
1874 Mar. 4.	N.S.	Taylor, Commander A. D., late Indian Navy.
1860 May 2.	N.S.	Temple, Sir R., Bart., K. C. S. I., C. I. E., B. C. S. <i>Europe.</i>
1878 June 5.	N.R.	Temple, Lieut. R. C., S. C. <i>Ambala.</i>
1876 Feb. 2.	R.	Tennant, Col. James Francis, R. E., F. R. S., C. I. E., Mint Master. <i>Calcutta.</i>
1875 June 2.	N.R.	Thibaut, Dr. G., Professor, Sanskrit College. <i>Benares.</i>

Date of Election.		
1869 Oct. 6.	N.R.	Thomson, A., The College. <i>Agra.</i>
1875 Nov. 3.	N.R.	Thomson, Robert George, c. s., Asst. Comr. <i>Jhelum, Panjab.</i>
1847 June 2.	L.M.	Thuillier, Major-Genl. Sir Henry Edward Landor, R. A., C. S. I., F. R. S. <i>Europe.</i>
1865 July 5.	N.R.	Tolbort, Thos. Wm. Hooper, c. s., Offg. Deputy Commissioner. <i>Gujranwala.</i>
1871 April 5.	F.M.	Treffitz, Oscar. <i>Europe.</i>
1861 June 5.	L.M.	Tremlett, James Dyer, M. A., c. s. Addl. Commissioner. <i>Jallandhar, Panjab.</i>
1872 July 3.	R.	Trevor, Colonel William Spottiswoode, R. E. With the Supreme Govt. <i>Calcutta.</i>
1880 Mar. 3.	F.M.	Tufnell, Lieut. R. H. C., 30th M. N. I. <i>Europe.</i>
1873 April 6.	R.	Turnbull, Robert, Secretary to the Corporation. <i>Calcutta.</i>
1863 May 6.	N.R.	Tyler, J. W., M. D., F. R. C. S., Supdt., Central Prison. <i>Agra.</i>
1865 Nov. 1.	R.	Waldie, David, F. C. S. <i>Calcutta.</i>
1861 May 1.	R.	Walker, Lieut.-Genl. James T., R. E., C. B., F. R. S., Surveyor General of India. <i>Calcutta.</i>
1875 April 7.	N.S.	Wall, Dr. Alfred John. <i>Europe.</i>
1863 Oct. 7.	N.S.	Waller, Walter Kerr, M. B. <i>Europe.</i>
1865 May 3.	R.	Waterhouse, Major James, B. S. C., Dy. Supdt., Survey of India. <i>Calcutta.</i>
1874 July 1.	R.	Watt, Dr. George. <i>Calcutta.</i>
1876 Dec. 6.	R.	Webb, W. T., M. A., Professor, Presidency College. <i>Calcutta.</i>
1879 Mar. 5.	N.R.	Weekes, A., c. s., Magistrate and Collector. <i>Purneah.</i>
1869 Sept. 1.	R.	Westland, James, c. s., Offg. Comptroller-General. <i>Calcutta.</i>
1867 Feb. 6.	R.	Westmacott, Edward Vesey, B. A., c. s. <i>Calcutta.</i>
1862 Oct. 8.	N.S.	Wheeler, James Talboys. <i>Europe.</i>
1878 Aug. 29.	N.R.	Wheeler, P. C., c. s. <i>Jaunpur.</i>
1875 Feb. 3.	N.R.	Whiteway, Richard Stephen, c. s. <i>Saharunpore.</i>
1878 Aug. 29.	N.S.	Whittall, R., Forest Dept. <i>Europe.</i>
1873 May 7.	N.R.	Williams, George Robert Carlisle, B. A., c. s., Depy. Commissioner. <i>Jhansi.</i>
1867 Jan. 16.	F.M.	Williamson, Capt. William John, C. I. E., Insp.-Genl. of Police. <i>Europe.</i>
1880 Feb. 4.	R.	Wilson, The Hon. Arthur. <i>Calcutta.</i>
1870 Aug. 3.	N.R.	Wilson, Robert Henry, B. A., c. s., Magte. and Collector. <i>Midnapur.</i>
1878 Mar. 6.	N.R.	Wilson, J., c. s. <i>Gurgaon, Punjab.</i>
1866 Mar. 7.	L.M.	Wise, Dr. J. F. N. Rostellan, County Cork. <i>Ireland.</i>
1870 Jan. 5.	N.S.	Wood-Mason, James. <i>Europe.</i>
1873 Aug. 6.	N.R.	Woodthorpe, Lieut.-Col. Robert Gossett, R. E., Asst. Supdt., Survey of India. <i>Sylhet.</i>

HONORARY MEMBERS.

Date of Election.	
1847 Nov. 3.	His Highness the Nawáb Nazim of Bengal. <i>Europe.</i>
1848 Feb. 2.	Sir J. D. Hooker, K. C. S. I., C. B., M. D., D. C. L., F. R. S., F. G. S. <i>Kew.</i>
1853 April 6.	Major-General H. C. Rawlinson, K. C. B., D. C. L., F. R. S. <i>London.</i>
1858 July 6.	B. H. Hodgson. <i>Europe.</i>
1860 Mar. 7.	Professor Max Müller. <i>Oxford.</i>
1860 Nov. 7.	Edward Thomas, F. R. S. <i>London.</i>
1860 Nov. 7.	Dr. Aloys Sprenger. <i>Heidelberg.</i>
1860 Nov. 7.	Dr. Albrecht Weber. <i>Berlin.</i>
1868 Feb. 5.	General A. Cunningham, C. S. I. <i>India.</i>
1868 Feb. 5.	Professor Bápu Deva Sástri. <i>Benares.</i>
1868 Sept. 2.	A. Grote. <i>London.</i>
1872 May 1.	Sir, G. B. Airy, K. C. B., M. A., D. C. L., LL. D., F. R. S. <i>London.</i>
1872 June 5.	Prof. T. H. Huxley, LL. D., PH. D., F. R. S., F. G. S., F. Z. S., F. L. S. <i>London.</i>
1875 Nov. 3.	Dr. O. Böhtlingk. <i>Jena.</i>
1875 Nov. 3.	Prof. J. O. Westwood. <i>Oxford.</i>
1876 April 5.	Col. H. Yule, R. E., C. B. <i>London.</i>
1876 April 5.	Dr. Werner Siemens. <i>Berlin.</i>
1879 June 4.	Prof. E. B. Cowell, D. C. L. <i>Cambridge.</i>
1879 June 4.	Dr. A. Günther. V. P. R. S. <i>London.</i>
1879 June 4.	Dr. J. Janssen. <i>Paris.</i>
1879 June 4.	Prof. H. Milne-Edwards. <i>Paris.</i>
1879 June 4.	Prof. P. Regnaud. <i>Lyons.</i>
1879 June 4.	E. Renan. <i>Paris.</i>
1881 Dec. 7.	Professor Hermann L. F. Helmholtz. <i>Berlin.</i>
1881 Dec. 7.	Dr. Rudolph v. Roth. <i>Tübingen.</i>
1881 Dec. 7.	Sir William Thomson, Knt., LL. D., F. R. S., F. R. S. E. <i>Glasgow.</i>
1881 Dec. 7.	Professor William Wright, LL. D. <i>Cambridge.</i>

CORRESPONDING MEMBERS.

1844 Oct. 2.	Macgowan, Dr. J. <i>Europe.</i>
1856 July 2.	Krämer, Herr A. von. <i>Alexandria.</i>
1856 „ 2.	Porter, Rev. J. <i>Damascus.</i>
1856 „ 2.	Smith, Dr. E. <i>Beyrout.</i>
1856 „ 2.	Taylor, J., Esq. <i>Bussorah.</i>
1857 Mar. 4.	Nietner, J., Esq. <i>Ceylon.</i>
1858 „ 3.	Schlagintweit, Herr R. von. <i>Giessen.</i>
1859 Nov. 2.	Frederick, Dr. H. <i>Batavia.</i>
1860 Feb. 1.	Baker, The Rev. H. <i>E. Malabar.</i>
1861 July 3.	Gösche, Dr. R.
1862 Mar. 3.	Murray, A., Esq. <i>London.</i>
1863 July 4.	Barnes, R. H., Esq. <i>Ceylon.</i>
1866 May 7.	Schlagintweit, Prof. E. von. <i>Berlin.</i>
1868 „ 5.	Holmböe, Prof. <i>Christiania.</i>

ASSOCIATE MEMBERS.

1865 May 3.	Dall, Rev. C. H.	<i>Calcutta.</i>
1874 Feb. 4.	Schaumburgh, J., Esq.	<i>Calcutta.</i>
1874 April 1.	Lafont, Rev. Fr. E., s. j., c. i. e.	<i>Calcutta.</i>
1875 Dec. 1.	Bate, Rev. J. D.	<i>Allahabad.</i>
1875 „ 1.	Maulawí Abdul Hai,	Madrasah. <i>Calcutta.</i>
1882 June 7.	Roeptstorff, F. A. de, Esq.	<i>Port Blair.</i>
1882 „ 7.	Giles, Herbert, Esq.	<i>Pagoda Island, China.</i>

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule 40.*—After the lapse of 3 years from the date of a Member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following Members will be removed from the next Member List of the Society under the operation of the above Rule :

Colonel Sir A. Clarke.
Dr. T. E. Charles.
Rev. W. C. Fyfe.
T. S. Isaac, Esq.
J. Schroder, Esq.
Dr. A. J. Wall.
J. T. Wheeler, Esq.

LOSS OF MEMBERS DURING 1882.

BY RETIREMENT.

J. W. Alexander, Esq.
J. Blackburn, Esq.
Dr. G. Bomford.
Dr. E. W. Chambers.
P. Donaldson, Esq.
Munshi Gangaprasad.
D. M. Gardner, Esq.
Babu J. C. Ghosha.
A. S. Harrison, Esq.
Lieut.-Col. W. R. M. Holroyd.
Herr W. Joest.
H. G. Keene, Esq.
Hon. J. B. Knight.
H. H. Locke, Esq.
R. Maliah, Esq.
Capt. H. A. Sawyer.
Rev. A. N. W. Spens.
The Hon. W. Stokes.

Removed from the List as explained in the Annual Report, p. 17.

G. H. M. Batten, Esq.
W. Dodgson, Esq.
Sir J. D. Gordon.
W. H. Johnson, Esq.
E. R. Lethbridge, Esq.
Major A. G. Ross.
Lieut.-Col. F. W. Stubbs.
Dr. J. J. Wood.

BY DEATH.

Ordinary Members.

Chr. J. Bandow, Esq.
L. Schwendler, Esq.
R. Scott, Esq.
M. G. Stewart, Esq.

Honorary Members.

Charles Darwin, Esq.
Dr. J. Muir.

Corresponding Member.

Herr. Baron H. von Schlagintweit-Sakünlünski.

BY REMOVAL.

Under Rule 40.

Lieut.-Col. W. E. Marshall.

[APPENDIX.]

ABSTRACT STATEMENT
OF
RECEIPTS AND DISBURSEMENTS
OF THE
ASIATIC SOCIETY OF BENGAL
FOR
THE YEAR 1882.

STATEMENT

Asiatic Society

Dr.

To ESTABLISHMENT.						
Salaries	..	...	...	Rs.	4,519	14 3
Commission	...	...	...	...	361	8 5
Pensions	...	...	...	...	228	0 0
					5,109	6 8
CONTINGENCIES.						
Stationery	...	...	...	...	165	9 9
Lighting	...	...	...	...	96	8 0
Building...	...	...	...	...	637	0 9
Taxes	...	...	...	...	720	0 0
Postage	...	...	...	...	620	10 6
Freight	...	...	...	...	25	6 0
Meetings...	...	...	...	...	146	6 0
Miscellaneous	...	...	...	...	307	11 7
Donation to Mr. Schwendler's memorial	...			...	50	0 0
Pedestal for Mr. Blochmann's bust (payment in part)	...			...	290	12 8
Furniture (red baize for meeting table)	...			...	60	0 0
					3,120	1 3
LIBRARY AND COLLECTIONS.						
Books	...	...	...	...	5,062	0 3
Local Periodicals	...	...	...	...	55	11 0
Binding	...	...	...	...	314	15 6
Coins	...	...	...	...	1	0 0
Catalogue	...	...	...	...	336	0 0
					5,769	10 9
PUBLICATIONS.						
Journal, Part I	...	...	...	...	1,668	4 9
Journal, Part II	...	...	...	...	1,519	13 10
Proceedings	...	...	...	...	929	10 0
					4,117	12 7
To Printing charges of circulars, receipt forms, &c.	...			...	295	7 0
						18,412 6 3
To PERSONAL ACCOUNT (Writes off and Miscellaneous)	...			...		1,326 13 1
To Balance	...	...	...	...		1,43,744 5 10
				Total Rs.	...	1,63,483 9 2

No. 1.
of Bengal.

Cr.

By Balance from last Report Rs. 1,42,595 0 10

By CASH RECEIPTS.

Publications sold for Cash	...	...	...	2,798	14	5
Interest on investments	...	...	...	6,651	8	0
Advances recovered	...	...	...	326	14	8
Building (sale of old beams)	...	...	...	50	0	0
Furniture (sale of old lamps)	...	...	...	100	0	0
Miscellaneous	...	...	...	185	10	0
				<u>10,112</u>	<u>15</u>	<u>1</u>

By PERSONAL ACCOUNT.

Admission fees	...	...	...	...	544	0	0
Subscriptions	...	...	...	...	7,903	0	0
Sales on credit	...	...	...	...	1,168	4	0
Miscellaneous	...	...	...	...	1,160	5	3
					<u>10,775</u>	<u>9</u>	<u>3</u>

Total Income 20,888 8 4

Total Rs. ... 1,63,483 9 2

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

STATEMENT

Oriental Publication Fund in Account

Dr.

To CASH EXPENDITURE.

Printing charges	..	..	..	..	8,291	6	3
Editing charges	..	..	..	..	2,572	13	0
Salaries ..	..	..	..	..	765	9	1
Advertising	..	..	..	..	136	8	0
Freight ..	..	..	..	..	84	12	6
Furniture (teakwood racks)	..	..	..	..	290	1	0
Stationery	..	..	..	..	25	0	6
Postage ..	..	..	..	..	423	4	6
Contingencies	..	..	..	..	109	2	4
Miscellaneous charges incurred by Major H. G. Raverty, for translating <i>Ṭabaqāt-i-Nāṣirī</i> , from 1870 to the end of 1881							
Commission on collecting bills	..	..	..	..	25	7	3

13,622 10 5

To PERSONAL ACCOUNT (Writes off and Miscellaneous) .. 10 14 0

Total Expenditure 13,633 8 5

To Balance.. 14,431 2 5

Total Rs. .. 28,064 10 10

No. 2.

with the Asiatic Society of Bengal.

Cr.

By Balance from last Report	12,586	9	11
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By CASH RECEIPTS.

Government allowance	9,000	0	0
Publications sold for cash	3,096	5	2
				<u>12,096</u>	<u>5</u>	<u>2</u>

By PERSONAL ACCOUNT.

Sales on credit	3,402	13	9
Miscellaneous	28	14	0
				<u>3,431</u>	<u>11</u>	<u>9</u>

Total Income				<u>15,528</u>	<u>0</u>	<u>11</u>
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Total Rs.	..	<u>28,064</u>	<u>10</u>	<u>10</u>
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JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

STATEMENT

Sanskrit Manuscripts Fund in Account

Dr.

To CASH EXPENDITURE.

Salaries ...	...	...	...	...	1,317	5	3
Travelling expenses ...	...	...	...	...	153	7	3
Printing ...	...	...	...	...	512	12	0
Editing charges	...	...	...	...	179	0	0
Stationery	...	...	...	...	37	10	0
Postage ...	...	...	...	...	81	1	0
Freight ...	...	...	...	...	7	0	0
Commission	...	...	...	...	3	11	0
Contingencies	...	...	...	...	60	6	9
					<hr/>		
					2,352	5	3
					<hr/>		

To PERSONAL ACCOUNT (Writes off and Miscellaneous) ... 2 0 0

			Total Expenditure	_____	2,354	5	3
To Balance	..	..	..	..	2,479	13	3
					<hr/>		
			Total Rs.	...	4,834	2	6
					<hr/>		

No. 3.

with the Asiatic Society of Bengal.

Cr.

By Balance from last Report	1,563	2	6
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BY CASH RECEIPTS.

Government allowance	3,200	0	0
Publications sold for cash	11	0	0
				<u>3,211</u>	<u>0</u>	<u>0</u>

BY PERSONAL ACCOUNT.

Publications sold on credit	60	0	0
Total Income				<u>3,271</u>	<u>0</u>	<u>0</u>

Total Rs.	...	<u>4,834</u>	<u>2</u>	<u>6</u>
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JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

To Balance from last Report	Rs.	5,670	3	6
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Advances for purchase of Sanskrit MSS., postage of books

Advances for purchase of Sanskrit MSSs, postage & books	958	6	1
to members, &c....	...	...	10,775	9	3
To Asiatic Society ...	...	...	3,481	11	9
To Oriental Publication Fund ...	...	...	60	0	0
To Sanskrit Manuscripts Preservation Fund	...	...	
					15,225 11 1

Total Rs. ... 20,895 14 7

No. 4.

*Account.**Cr.*

By Cash Receipts	Rs. 13,125 12 2
By Asiatic Society ... ..	... 1,326 13 1
By Oriental Publication Fund ..	.. 10 14 0
By Sanskrit Manuscripts Preservation Fund	... 2 0 0
	<hr/> 14,465 7 3

By Balances.	Due to the Society.			Due by the Society.		
Old Claims	1,125	11	0	...	...	...
Members	4,024	3	2	178	15	0
Subscribers to Publications	591	9	10	1,015	6	0
Employees	30	0	0	230	0	0
Agents	1,907	1	10	...	..	..
Miscellaneous	345	15	3	169	12	9
	8,024	9	1	1,594	1	9

6,430 7 4

Total Rs. ...

20,805 14 7

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

STATEMENT

Invest

Dr.

		Nominal.		Actual.		
To Balance from last Report ...	...	Rs. 1,48,300	0 0	1,47,618	0 0	
To Cash ...	...	...	7,500 0 0	7,591	1 6	
Total Rs. ...		1,55,800	0 0	1,55,209	1 6	

STATEMENT

Trust

Dr.

To Pedestal for Mr. Blochmann's bust ...	...	Rs. 345 0 0
To Balance (Servants' Pension Fund) ...	...	1,007 11 4
Total Rs. ...		1,352 11 4

No. 5.

ments.

Cr.

					Nominal.			Actual.			
By Cash	...	...	...	Rs.	2,000	0	0	2,056	4	0
By Balance	...	...	...	...	1,53,800	0	0	1,53,152	13	6
Total Rs.					...	1,55,800	0	0	1,55,209	1	6

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

No. 6.

Funds.

Cr.

By Balances from {	Servants' Pension Fund	Rs.	1,007	11	4		
last Report ... {	Blochmann Memorial Fund	...	54	8	4		
						1,061	14 8
By Asiatic Society (on account of Pedestal for Mr.							
Blochmann's bust)	...	...	...	...	...	290	12 8
Total Rs.						...	1,352 11 4

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

STATEMENT

Cash.

Dr.

To Balance from last Report	Rs.	4,468	8	5
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RECEIPTS.

To Personal Account	13,125	12	2
To Asiatic Society	10,112	15	1
To Oriental Publication Fund	12,096	5	2
To Sanskrit Manuscripts Fund	...	...	...	...	3,211	0	0
To Investments	...	...	...	...	2,056	4	0
To Trust Funds	...	...	...	...	290	12	8
Total Rs.	...	...	...	...	45,361	9	6

STATEMENT

Balance

Dr.

To Personal Account	...	...	...	...	Rs.	6,430	7	4
To Cash	...	...	...	...	...	2,079	12	0
To Investments	...	...	...	...	...	1,53,152	13	6
Total Rs.	...	...	...	...	...	1,61,663	0	10

No. 7.

Cr.

EXPENDITURE.

By Personal Account ...	...	...	...	Rs.	958	6	1
By Asiatic Society ...	...	...	...	...	18,412	6	3
By Oriental Publication Fund ...	...	...	...	...	13,622	10	5
By Sanskrit Manuscripts Fund ...	...	...	...	...	2,352	5	3
By Investments ...	...	...	...	...	7,591	1	6
By Trust Funds ...	...	...	...	...	345	0	0
By Balance ...	...	...	...	...	2,079	12	0

Total Rs. ... 45,361 9 6

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.

No. 8.

Sheet.

Cr.

By Asiatic Society ...	...	...	...	Rs.	1,43,744	5	10
By Sanskrit Manuscripts Fund ...	...	...	...	...	2,479	13	3
By Oriental Publication Fund ...	...	...	...	...	14,431	2	5
By Trust Funds ...	...	...	...	...	1,007	11	4

Total Rs. ... 1,61,663 0 10

JOHN ELIOT,
Hony. Secy. and Treasurer,
Asiatic Society of Bengal.

J. WESTLAND,
Auditor.



PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR JANUARY, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd January, 1883, at 9 P. M.

The Hon. J. Gibbs, C. S. I., C. I. E., F. R. G. S., Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Ceylon Government,—The Lepidoptera of Ceylon, Parts III-V, by F. Moore.

2. From the Committee, Norwegian North Atlantic Expedition,—Norwegian North Atlantic Expedition, 1876-78. VI, Zoology, Holothuriodea, by D. C. Danielssen and Johan Koren ; VII, Zoology, Annelida, by G. Armauer Hansen.

3. From the Directeur van 'Slandsdrukkerij, Batavia,—Minhâdj at-Tâlibîn. Le Guide des zélés croyants. Manuel de Jurisprudence Musulmane selon le Rite de Châfi't, Vol. I, by L. W. C. van den Berg.

4. From the Norwegische Commission der Europäischen Gradmessung, Christiania,—Geodätische Arbeiten, Hefte I-III,—Vandstandsobservationer, Heft I.

6. From the Home Department (Forest Branch),—(1) A Manual of the Land Revenue Systems and Land Tenures of British India, by B. H. Baden-Powell ; (2) Suggestions regarding the Demarcation and Management of the Forests in Kulu, by Dr. W. Schlich.

7. From the Curator, Government Central Book Depôt, Bombay,—Report on Sanskrit MSS. during the year 1881-82.

8. From the Meteorological Reporter for Western India,—Brief Sketch of the Meteorology of the Bombay Presidency in 1881.

9. From the Secretaria de Fomento, Guatemala,—Movimiento de Poblacion habido en los Pueblos de la Republica de Guatemala durante el año de 1881.

10. From the Authors,—State Education in the N. W. Provinces and Oudh, by Orbilius Indicus; (2) Rede zum Geburtsfeste des höchstseligen Grossherzogs Karl Friedrich von Baden und zur akademischen Preisvertheilung am 22. November, 1882, by Dr. Adolph Hausrath.

11. From the Société de Géographie de Lyon,—Congrès National des Sociétés Françaises de Géographie, 4^e Session, Lyon, 1881. Comptes Rendu des Séances.

12. From the Department of Agriculture and Commerce, N. W. Provinces and Oudh,—Field and Garden Crops of the North-Western Provinces and Oudh, with illustrations, by J. F. Duthie and J. B. Fuller.

13. From the Tumlook Public Library,—A collection of coins.

The COUNCIL reported that, in consequence of the deaths of Mr. Charles Darwin and Dr. John Muir, there were now three vacancies in the list of Honorary Members, one vacancy having been left unfilled at the last election. The Council therefore recommended the three following gentlemen for election as Honorary Members at the next meeting:—

W. T. Blanford, F. R. S., who, besides his official scientific labours in the geology of India, has from the beginning of his career in this country (in 1855) distinguished himself by his zoological studies, especially of the Mammals, Birds, Reptiles and Mollusks. His numerous contributions to Natural History have been published in the Journal of the Society and other scientific periodicals, and in his works entitled "Zoology and Geology of Abyssinia" and "Geology and Zoology of Eastern Persia."

A. R. Wallace, F. R. S., in recognition of his great services to Natural Science, both in the field and in literary labours. His travels in the Malay Archipelago come especially under the cognisance of this Society, and the results of these travels, in rich collections and careful observations, have added immensely to our knowledge of the variations in animal life under tropical and insular conditions. His numerous pamphlets and books, and especially his great work on the geographical distribution of animals, place him in the first rank of scientific men of the day.

Dr. William Dwight Whitney, Professor of Sanskrit and Comparative Philology in Yale College, New Haven, Connecticut, in recognition of his successful linguistic researches extending over a period of thirty-three years. He undertook an edition of the Atharva Veda in 1851, and published it jointly with Professor Roth in 1856. He has since edited and translated the *Saunakiya Ohaturādhyāyikā* of the Atharva Veda and the *Taittiriya Prātisākhya* of the Black Yajur Veda. His "Oriental and Linguistic Essays" in two volumes and his lectures on "Language and the Study of Language" are highly estimated as valuable contributions to the study of Philology.

The COUNCIL also proposed the following gentleman for election as an Associate Member at the next meeting :

C. J. Rodgers, Principal, Normal College, Amritsar, on account of his numerous and valuable contributions to the numismatology of India.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :

1. Major Trevor Plowden, B. S. C., Simla.

2. Chas. H. Harding, Esq., C. S., Tajpore.

The following gentleman is a candidate for ballot at the next meeting :

L. J. K. Brace, Esq., Curator of the Herbarium, Botanical Gardens, proposed by Dr. G. King, seconded by Dr. J. Scully.

The following gentlemen have intimated their desire to withdraw from the Society :

R. W. Nicholson, Esq.

Major Genl. G. E. Evezard.

The CHAIRMAN announced that Mr. P. C. Wheeler had written a letter of explanation and apology which the Council had accepted, and that, inferring that Mr. Wheeler was now willing to pay the full sum due, the Council had decided to desist from any further proceeding in the matter until he had had an opportunity of paying: in the event of his doing so, he will be allowed to withdraw from the Society in the usual way.

The Hon'ble J. Gibbs, in exhibiting a drawing and an estampage of two enormous gold coins, said :—

The former represents a 200 gold mohur piece of Shah Jehan, the latter a 100 gold mohur piece of Aurangzib. The earliest reference to such pieces will be found in Tavernier's *Travels in India*, pp. 106-7, where he gives the drawing of one, but different from and smaller than these: he says they were coined and thrown among the people at the coronation, and were mostly of silver, that there were very few gold, but he adds that Aurangzib did not coin any such pieces for his coronation.

Marsden also alludes to them at page 466 where he describes a large silver medal of Husein of Persia, A. H. 1121, which is engraved in plate 30: also at page 641, where he clearly alludes to a coin similar to the larger of these two, that coined by Shah Jehan, and at page 651 he alludes to a silver medal of Aurangzib in the collection of the Duke of Saxe Gotha, giving its diameter at 4.4 in., which is about the size of the Aurangzib gold coin, while the Shah Jehan is said to be 5 inches, which coincides with the drawing. See also Thomas in a note to his "*Pathan Kings of Delhi*," page 423, where such a coin is said to have weighed 70 oz. Also Richard-

son's Persian Dictionary, by Wilkins, p. 536, word *شاه*, under which a description of the coin of Shah Jehan is given. The translation of the inscription is:

Obv. centre. "The bright star of Religion, Muhammad, a second Sahib Kiran, Shah Jehan, the victorious Emperor.

In the 4 segments:

"The impression on this coin, of 200 mohurs, was struck by Divine favor,

"By the second Sahib Kiran, Shah Jehan, the defender of the faith."

"May the face of gold, from the sculpture of this coin, enlighten the world,

"As the splendid face of the moon is (illuminated) by the rays of the sun."

Rev.

The Mahommedan creed, followed by "struck in the palace of Shah Jehanabad (Dehli) A. H. 1064 (A. D. 1653).

In the segments:

"Religion was enlightened by the truth of Abubekre."

"The faith was strengthened by the justice of Omar."

"Piety was refreshed by the mildness and modesty of Othman."

"The world was illumined by the learning of Ali."

In Thomas, page 418, Akbar is said to have coined massive pieces in gold called Sihansah, value 100 Lal Jalali, or 101 tolas 9 mashi 7 rutti and fractional portions of them. In the collection of the Bombay Branch, Royal Asiatic Society, there is a fine one of 5 gold mohurs, which was presented by a banker of Guzerat, Rao Bahadur Premabhai Hemabai. These copies of these splendid coins were sent by General Cunningham with the following note:—

"The 200 gold mohur piece was at Patna some 50 to 80 years ago. I believe there is a notice of it in the Preface to Richardson's Persian Dictionary.

The 100 gold mohur piece was at Benares 45 years ago, and is I believe still there.

I take both pieces to be *Nazzarnána medais*. The noble who had to present 200 gold mohurs to Shah Jahan made a single piece for his offering."

The inscription of the Aurangzib piece I have not been able to make out, as the letters are very faint, and read of course from left to right, but I hope to take a cast from the estampage, which will give the writing in the correct direction: the name in the centre is all correct.

The Hon'ble J. Gibbs also exhibited some very rare Muhammadan coins, and made the following remarks:—

The first I would notice is the coin of Akbar, on the *Obv.* of which is

a Falcon and on the *Rev.* the inscription "Alla Acbar—isfandarmuz Ilahi 45 Zarab Asir." It was struck by Akbar to commemorate his capture of Asirghur, in which fort he found immense treasure. The coin is very rare: one is in the Payne Knight collection in the British Museum, another, of which all trace has been lost, was seen by General Cunningham many years ago at Benares, and is engraved from a wax impression he took, in Pl. 19, Vol. IX, of the *Archæological Reports*, from which the accompanying woodcut is copied. I procured this by exchange in Bombay, and it is apparently the second now known: the one General Cunningham had seen was on a necklace, and as this shows signs of having been used as a pendant, it may be the same coin.



I next draw attention to the 12 Zodiacal gold mohurs, all genuine. I have been for the last 30 years collecting them, and such a set is extremely rare. I also show plaster casts of the best specimens in the British Museum collection, for comparison. Among mine the Cancer and the Aquarius are unique: the former has the crab small, but very perfect, with a complete halo round it, similar, so far, to Mrs. Welland's, mentioned by Marsden at page 626. The inscription runs from the bottom:

شاه
 بحر —————
 جهان گیر یافت صدر یور
 بم —————
 ز نام نور جهان پادشاه
 احمد —————
 صوب ۱۰۳۴

It is apparently coined at Ajmir. The Museum specimen has the crab large extending over the halo. Mine, as will be seen, has on the *Rev.* the name of Noor Jehan Begum coupled with that of Jehanghir, and the date is rare, Hijra 1034 J. 20, the latest date known. The only other gold zodiac with this Queen's name on it is one in the French National collection, Sagittarius. It is alluded to by Marsden on page 630, and is pictured in Bonneville's work. I have seen the coin but it is of poor work, the writing very stiff and the

inscription differs slightly. I do not think it was one of the original set. The Aquarius is of great importance, as it has the Ahmedabad reverse, having been coined there in 1027. I know no other gold coin from this mint, from which issued the silver only, and as no silver Aquarius is known in any collection, I am inclined to think that this was struck, perhaps as a pattern, from the silver die. The Aquarius coins in the British Museum differ, but are all, so far as the obv. goes, very poor,—a single figure, male or female, with waterpots, or an old man seated pouring water over his shoulder. The latter I consider not a genuine coin. I produce one of them and it will be seen that it is of very inferior work.

The silver are 6,—Taurus, Leo, Cancer, Aries, Gemini, and Pisces, all struck at Ahmedabad. The other signs are not known to have issued in this metal from this mint, and the Pisces of my collection is *unique*, no other specimen being known. The work on the Obv. of these silver coins is fine, and the design on the Taurus especially much more spirited than that on the gold.

I exhibit also a Scorpio in silver, but it is from the Agra gold die. There are specimens struck from several of the gold dies in silver, but they are mere specimens, the current silver being all struck at Ahmedabad.

I also exhibit a very rare square gold mohur of Jehanghir with inscription, *Obv.* "Noor-ud-din Jehanghir Shah Acbar Shah." *Rev.* "Mah Kurdad-ilahi Zarab, Agra 1020." This is one of the coins struck in the Elahi Era, the writing is in the Nishki style, and the work very fine. It is, I believe, unique.

The square silver rupee is also, a very rare coin: it has on its *Obv.* "Noor-ud-din Jehanghir Shah Akbar Shah, Zarab Agra. Mah Ardebihist 13.

I need not enlarge on the zodiac coins, but will refer those who wish for more information, especially as to the forgeries, to my paper in the Bombay Branch Royal Asiatic Society's Journal in Vol. XIV, p. 155, and to Marsden's work.

The following papers were read—

1. *On the excavations made in the erection of the Offices of the East Indian Railway and the remains of Old Fort William found at the time.*—
By R. R. BAYNE, M. R. I. B. A.

(Abstract.)

This paper recorded the positions of the North curtain wall and the N. E. Bastion of the old fort, which were entirely uncovered and partly destroyed in putting in the foundations of the new offices for the E. I. Railway.

The length of the N. curtain wall measures 300 feet: it is called by Orme, 100 yards (see his "History of the War in Bengal"). This wall and those portions of the East and West walls which were partly uncovered are 4 feet thick, built of good material and very solid.

At the junction of the North curtain with the East curtain and again with the West curtain were, first, square bastions, subsequently added to and altered into bastions with flanks, sides and salients. The whole of these walls were very perfect and distinct, the superstructure having been razed to the ground line: all below the ground was left intact.

The North curtain wall has been left intact and on it has been built the South wall of one room of the new building which is 210 feet long.

In that portion of the enceinte of the fort which was uncovered were found the walls of the carpenter's shop, a building 90 by 40 feet with a row of columns down the centre: the floor was covered with wood-ash, in some places 8 inches thick: the bricks of the floor were partly vitrified.

The old drains, surface and underground, were found in many places, and the terminal of them all in a culvert running to the river, 2'6" wide and 3'6" high, stopped by a wrought iron grid at the river wall which was about 75 feet west of the West curtain.

West of this curtain was found the wall that formed the outer rampart and which was embrasured for guns.

Inside of the curtains, wherever exposed, was found an inner wall forming a row of chambers: this wall was 14'6" distant from the curtains and this was of course the width of the chambers. This space was paved with brick on edge.

In the West curtain was found a small gateway alluded to by Orme as the small gateway by which Suraja Dowleah entered the fort after its capitulation, and after his parley with Mr. Holwell, the Officer of the Company in charge of the fort. A sill stone in the door has been lifted to the surface of the road and there re-set in order to note its position.

Starting from the North curtain, the position of which is correctly known, and setting out to the south the South curtain from Orme's Map and figures, this curtain comes immediately at the back of the deep, heavy and pointed arches in the Post Office compound, and these buildings are doubtless that block of building stated by Orme as built contiguous to the south curtain and outside it.

Scaling a completion of the front, on plan, from Orme's figures and plan and those now found, the site of the Black Hole would come in the passage way on the north of the Post Office by which the Post Office vans enter and leave to the east. The S. E. Bastion has been destroyed by the foundations of the N. E. corner tower of the Post Office.

Three different levels of floor were found in the excavation: one

in the buildings of the date of the capture of the Fort *viz.*, 1756, one of a subsequent date, 1'5" above that, then the level of the Custom House sheds demolished to make way for the E. I. Railways, 1'6" above the last, and now the floors of the ground rooms of this building, the last 4'9" above the first, the growth in level of a century and a quarter.

Similarly the river bank has gone westward, probably by accretion in the end of the last or commencement of this century, and by reclamation, as we know, between 1847 and 1882. The river wall in 1756 being about 75 feet west of the first curtain, in 1847 it was about 625 feet and now the jetty edge is 800 feet west of the same point.

At the N. E. corner of the E. I. Railway offices will be found recorded in the pavement two raking lines indicating the salient of the N. E. bastion.

What has now been found of the fort walls clearly shows that the site of the Port Commissioner's Office was, in 1756, if not in the river, on the river bank and quite outside the Fort enceinte or even its river wall. At the time it was built it was stated that the foundations discovered were portions of Fort William: we now know this was a mistake.

There is an interesting old piece of artillery in the Fort, dug up in the course of some excavations in the Custom House, used as a corner spurstone, well worth preservation, an old wrought iron ring gun, about 1½ in. bore, fast going to decay with corrosion.

Mr. Bayne hoped that the Government of Bengal would sanction a search, now that so much was known to start with, for the actual site of the Blackhole. A few more excavations at a small expense would suffice to render the sites quite distinct.

This paper will be published in full, with Plates, in the Journal, Pt. I.

The Chairman said he had hoped His Excellency the Commander-in-Chief would have spoken, and taken charge of the old Fort as he has of the present one, and not have left it to a layman, but as His Excellency would not, he, the Chairman, begged to propose a vote of thanks to Mr. Bayne for his interesting paper on the old fort, and the famous Black Hole of Calcutta. A little book by Dr. Busteed had lately been published by Messrs. Thacker, Spink & Co., entitled "Echoes of Old Calcutta," in the first article of which was an account of this, to all Englishmen, most interesting spot, and the writer alluded to the great difficulty of now pointing out the place and the necessity of putting up some tablet to mark where it was supposed to be. He, the Chairman, thought that Mr. Bayne's able paper had removed all reasonable doubt from the matter by his having, by actual excavation in many places and measurements and comparison with former maps and plans, proved where the old walls and bastions had stood, and now appeared to be the time to mark the places. He had from

experience found that in this country official memory may be set at from six to eight years. It might be remembered, perhaps, who had been Governor-General or Governor for a longer period, but certainly not who had been Members of Council; and, having resided himself for about sixteen years in the city of Bombay, he had found himself about the oldest inhabitant, and had become a referee on such points. In order to prevent such ignorance in future, he had while in the Government of that Presidency prepared inscriptions showing when and in whose governorship each of the new public offices had been sanctioned, commenced, and finished, who prepared the design, for what purpose the building was erected, who was the engineer who superintended the work and who was the Public Works Department Secretary, what it had been estimated to cost, and what was the actual outlay. All this was cut on a marble slab, and inserted in the entrance hall. He therefore strongly recommended the Society to address the Lieutenant-Governor of Bengal, and urge the necessity of making the few further inexpensive searches recommended by Mr. Bayne, and the erection of the necessary tablets, showing where the original bastions and the Black Hole were situated. He felt sure the present Government would not object or think, as a former had done about forty or fifty years ago, that the English prestige would be impaired thereby—a fancy which had caused them to remove the monument originally erected to mark the spot, and this so effectually as to render the finding of any trace of the marble tablets which had been placed on the two sides impossible. He hoped Mr. Bayne would kindly draw up a memorandum showing what was wanted, and he felt sure his friend, Mr. Rivers Thompson, would accede to the wishes of the Society. He was glad to see His Excellency the Commander-in-Chief agreed with him on this point. He then put the proposition, and the meeting carried the vote of thanks to Mr. Bayne by acclamation.

Mr. Blanford expressed the pleasure he had experienced in listening to the very interesting discoveries described by Mr. Bayne. Some years since attention was drawn by Dr. Norman Chevers to some arches which were a remnant of the buildings attached to the old fort, and still, he believed, to be seen in the compound of the New Post Office. These were described by Dr. Chevers as probably a portion of a cloister which ran round inside the curtain of the old fort, and, in that gentleman's opinion, it was the space corresponding to one of the arches of this cloister which had been enclosed by walls and formed the Black Hole of history. The monument which recorded the names of the victims of the Black Hole formerly stood at the N. W. corner of Tank Square on the spot now occupied by a fountain. This appeared to be the site of the ravelin shown on Mr. Bayne's plan.

Mr. Bayne, in reply to the remarks made by the Chairman and Mr. Blanford, regretted that Dr. Busteed had not been in Calcutta when he prepared his paper, knowing the interest he had taken in the subject matter. With reference to Dr. Busteed's conjecture in his "Echoes of Old Calcutta" as to the arcade and arches in the post office compound, Mr. Bayne felt certain that they had never been inside the Fort but lay outside. The Piazza referred to by Holwell was one contiguous to, and he thought formed part of, the Governor's House. Some information ought to be found during the laying of the 10 in. pipe through the Custom House compound shortly to be taken in hand. Mr. Bayne conjectured it would pass through the east entrance gate of the Fort: if not through the gate, it would go through the E. and W. curtains and across the foundations of the Governor's House. He hoped the results of these excavations would be watched and recorded. He regretted that absence from Calcutta during the next three months would prevent him undertaking the record and watching of the work. With reference to the Chairman's remarks about appealing to the Lieut-Governor of Bengal, he hoped no time would be lost in the application. If the house in which the Post Master is living is to be demolished, here again record should be kept as the S. W. Bastion will be found there. Mr. Bayne expressed his willingness to undertake the search for a few more records of the old fort, in fact he hoped it might be entrusted to him to enable him to complete his record of the old Fort for the papers of this Society.

2. *A new species of Hipparchia* (Lepidoptera Rhopalocera) from the N. W. Himalayas.—By MAJOR G. F. L. MARSHALL, R. E.

(Abstract.)

The author describes a new species of *Hipparchia* which was found by Major J. Biddulph on the Shandur Plateau in Northern Kashmir. Only two specimens were taken, both females. This makes the tenth species of the genus known to occur in the N. W. Himalayas; and, strangely enough, in four cases out of the 10 only the females are known, and in a fifth the male has only recently been discovered. Major Marshall has given the name of *Hipparchia digna* to this species.

This paper will be published in the Journal, Part II.

3. *Notes on and drawings of the Animals of various Indian Land Mollusca* (Pulmonifera).—By LIEUT.-COL. H. H. GODWIN-AUSTEN, F. R. S., F. Z. S.

(Abstract.)

This is the second paper of a series intended to illustrate plates of various land Mollusca of India prepared from the valuable original draw-

ings of Dr. Ferd. Stoliczka. The first paper was published in the Journal for 1880. The author hopes that his paper will lead some of the members of the Asiatic Society to look more closely at the animals of the land shells of their districts, or collect them in spirits for the Museum in Calcutta, as the slugs are quite unknown from many parts of India. One object in publishing these drawings is to bring about a more natural classification of the Indian *Helicidae* and Col. Godwin-Austen draws attention to Mr. Blanford's paper entitled "Contributions to Indian Malacology No. XII", in which Mr. Blanford makes some remarks on the same subject, with which Col. Godwin-Austen quite agrees, particularly as to the importance of the sections *Helicarion*, *Macrochlamys*, *Arlophanta*, *Euplecta*, &c.

This paper will be published in the Journal, Part II.

4. *Notes on a List of Silver Coins of Aurangzeb, Alamgir.*—By C. J.

RODGERS.

(1). The mints and their various titles.

Multan is called on No. 2 "*Dár-ul-Amán*." "*The gate of safety or peace*."

Surat is called on No. 5 "*Bandar-i-Mubárah*."

(It was known as "*Báb-ul-Hajj*", "*the gate of pilgrimage*," because from it pilgrims started for Mekka. "*The blessed port*" is hence a title of the town).

Burhanpúr is styled on No. 6 "*Baldat-i-Fákhírah*," "*the excellent town*."

Dehli is styled "*Dár-ul-Khiláfat*" on No. 9, &c.

Láhore is called "*Dár-us-Sultanat*" on No. 19, &c.

Agrah is called "*Akbarábád*" on No. 12.

Kábul is called "*Dár-ul-Mulk*" on No. 42.

Agrah is also called "*Mustaqir-ul-Khiláfat*" on No. 58.

Haiderábád is termed "*Dár-ul-Jihád*" on No. 51.

Bujápur is called "*Dár-ul-Zafar*" on No. 59.

Ajmír is termed "*Dár-ul-Khim*" on No. 68.

Thus we have here ten cities rejoicing in titles.

The other mints are Golconda, Patnah, Akbarnagar, Janagarh, Aurangábád, Ahmadábád, Bhakkar, Tattah, Kambay, Sholápúr, Alamgírpúr, Kashmír, Ettáwah or Ettáwá, Zafarpúr, Bareilly, Lucknow, Nárnol, Islámábád, Jahángírnagar, Makhsúsábád, Sirhind and Ahmadnagar. Thus we have rupees of 32 mints in all. Some were in the extremities of the Empire, as Islámábád, Sholápúr, Kábul, Kashmír, Jímagarh, Bhakkar and Tatta.

(2) The years are counted evidently from 1068 the year of the deposition of Sháh Jahán. But Aurangzeb did not exactly know whether he was then reigning or not. Sháh Jahán might at any time have taken the

throne. In case of the years on the rupees struck at Golconda there is great disparity. There is one of the 1st year: that may be right. It has on it 1069, but Aurangzeb had not then conquered it. The rupee of the 14th year has 1076 on it, which is the 8th year of the reign.

3. *The Nuthárs.* I am exceedingly fortunate in being able to give four of these coins. The inscriptions and weights show what they were, money scattered amongst the crowd. The word *nuthár* (نثار) means anything scattered about. I do not know of any other cabinet which contains one of these interesting little pieces. The inscriptions on Nos. 89 and 90 are very much cut. Those on 87 and 88 are perfect. The weights are equivalent to whole *nuthárs*, half *nuthárs* and quarter *nuthárs*, but all have the word *nuthár* alone on them. No. 88 I obtained by exchange from the cabinet of Alexander Grant, Esq. The others were obtained in the Panjáb. It seems Jahángír was the first to make these coins. I have of his three of exquisite beauty struck at Ajmír, Ahmadábád and Dár-ul-Khiláfat Agráh in the 10th, 13th and 14th years, *i. e.*, in 1024, 1027 and 1028 A. H. I have also two of Sháh Jahán's struck at Kashmír and Lahore. I have never seen any others. Akbar struck small silver coins. I have one weighing only 8·5 grs. It was struck at Dehli in the month of Ardi Bihisht of the Ilahí year 38. It has no sign of the word نثار on it. Where all these scattered coins have gone to is a most interesting question. I asked Pandit Ratan Narain of Dehlí, who is a great collector, if he had yet obtained one of any king: he said he had not. There is one of Sháh Jahán in the Museum at Dehlí as large in size as an eight anna piece. But I could not obtain permission to take it home and draw it. It is the finest I have yet seen so far as size is concerned, but those of Jahángír's excel it in matter of execution. I copied the inscriptions on it: they are,—

Obverse.	Reverse.
بادشاه غازی	شاه جهان آباد
شاه جهان	ضرب دار الخلافه
نثار صاحب قران ثانی	سنه ۲۶ جلوس سنه ۱۰۶۳ هجری

I have not the slightest doubt that in collections in India there are many such coins which up to the present have not been noticed.

The Chairman observed that he must confess he could not see much use in collecting a rupee of each year of an Emperor's reign: he considered a collection of mints very useful, as it would show what were in those times considered towns of importance. Mr. Rodgers had stated that he presumed that there would be great difficulty in making a collection of the shillings of each year of the reign of George III. There certainly would be, for there were only, in that long reign of sixty years, eight years in

which shillings were struck : first in 1763, when such coins to the value of £100 were struck to be thrown among the crowd on the entering of the Earl of Northumberland as Viceroy into Dublin, and hence known as "Northumberland shillings:" then in 1798 a few were struck, and not again until 1816, when the silver coinage was reformed, and from that date to 1820, inclusive, shillings were coined yearly. But the part of Mr. Rodgers's paper which was the most interesting was that on the "Nuthbars" as he called them, small silver pieces made for the purpose of throwing among the crowd on important occasions. He, the Chairman, had not heard of such before, and he hoped Mr Rodgers would be able soon to give the Society drawings, which might appear in the Proceedings.

Nawab Abdool Luteef Khan, Bahadoor, mentioned that the word *نقد* is commonly pronounced *Niṣār*, and means "money which is thrown amongst the people at marriages and on other festive occasions." The custom of distributing pieces of money among the crowd was still kept up by rich Muhammadan families at wedding festivals, and he described one of these ceremonies which took place at Moorshedabad, about 20 years ago, when the sons of the late Nawab Ali Nucky Khan of Lucknow were married to the daughters of His Highness the Nawab Nazim of Bengal, at which marriage he was himself present. When the bridegrooms were proceeding to the house of the brides in grand procession, pieces of gold and silver were scattered among the crowd from the back of the elephants on which the bridegrooms were seated.

5. *Some further results of Sun-thermometer Observations, with reference to Atmospheric Absorption and the supposed variation of the Solar Heat.*—By H. F. BLANFORD, F. R. S.

Owing to the lateness of the hour, this paper was postponed to next meeting.

LIBRARY.

The following additions have been made to the Library since the Meeting held in December last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—*American Journal of Mathematics*, Vol. V, No. 1.

Bordeaux. Société de Géographie Commerciale,—*Bulletin*, Nos. 17-18.

- Brussels. Musée Royal d'Histoire Naturelle de Belgique,—Bulletin, Vol. I, No. 1, 1882.
- Calcutta. Geological Survey of India,—Memoirs, Vol. XIX, Part 2.
- . ———. Memoirs, Palæontologia Indica,—Ser. XII, Vol. iv, Part 1; and Ser. XIII, Part 1.
- Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. II, Nos. 49-51; and Supplement, 20th December, 1882.
- London. Academy,—Nos. 550-552.
- . Athenæum,—Nos. 2873-2875.
- . Nature,—Vol. XXVII, Nos. 681-683.
- . Royal Geographical Society,—Proceedings, Vol. IV, No. 11, November, 1882.
- . Royal Institution of Great Britain,—Proceedings, Vol. IX, Parts 4-5, Nos. 73-74.
- . ———. List of Members, July, 1882.
- . Royal Microscopical Society,—Journal, Vol. II (2nd Ser.), Part 5.
- . Royal Society,—Proceedings, Vol. XXXIV, No. 221.
- . Statistical Society,—Journal, Vol. XLV, Part 3, September, 1882.
- Munich. Repertorium für Experimental-Physik,—Vol. XVIII, No. 11.
- Paris. La Société d'Anthropologie,—Bulletin, Vol. V, No. 3, April to July, 1882.
- . Société de Géographie,—Bulletin, Vol. III, Part 3, 1882.
- . ———. Compte Rendu des Séances,—Nos. 18-19, 1882.
- Rome. Società degli Spettroscopisti Italiani,—Memorie, Vol. XI, No. 9, September, 1882.
- Yokohama. Asiatic Society of Japan,—Transactions, Vol. X, Part 2.
- Zagreb. Arkeologickoga Društva,—Viestnik, Vol. IV, No. 4.

PAMPHLETS,

presented by the Authors.

- HAUSBATH, DR. ADOLPH. Rede zum Geburtsfeste des höchstseligen Grossherzogs Karl Friedrich von Baden und zur akademischen Preisvertheilung am 22. November, 1882. 4to. Heidelberg, 1882. Pam.
- ORBILIUS INDICUS. State Education in the N. W. Provinces and Oudh. 8vo. Calcutta. Pam.

MISCELLANEOUS PRESENTATIONS.

- MOORE, F. The Lepidoptera of Ceylon. Parts III-V. 4to. London, 1881-82.

GOVERNMENT OF CEYLON.

Report on Sanskrit MSS. during the year 1881-82. Fep. Poona, 1882.

CURATOR, GOVERNMENT CENTRAL BOOK DEPOT, BOMBAY.

DUTHIE, J. F.; AND FULLER, J. B. *Field and Garden Crops of the North Western Provinces and Oudh, with illustrations.* 4to. Roorkee, 1882.

DEPT. OF AGRICULTURE & COMMERCE, N. W. P. AND OUDH.

BERG, L. W. C. VAN DEN. *Minhâdj at-Tâlibîn. Le Guide des Zélés Cro-
yants. Manuel de Jurisprudence Musulmane selon le Rite de Châfiî.*
Vol. I. 4to. Batavia, 1882.

DIRECTEUR VAN 'SLANDSDRUKKERIJ, BATAVIA.

FALLON, S. W. *A New English-Hindustani Dictionary, Part XI.* 8vo.
Benares, 1882.

HOME DEPARTMENT.

BADEN-POWELL, B. H. *A Manual of the Land Revenue Systems and
Land Tenures of British India.* 8vo. Calcutta, 1882.

SCHLICH, DR. W. *Suggestions regarding the Demarcation and Manage-
ment of the Forests in Kulu.* 4to. Calcutta, 1882.

HOME DEPARTMENT (FOREST BRANCH).

Brief Sketch of the Meteorology of the Bombay Presidency in 1881. 8vo.
Bombay, 1882.

METEOROLOGICAL REPORTER FOR WESTERN INDIA.

Geodätische Arbeiten. Hefte I-III. 4to. Christiania, 1880-82.

Vandstandsobservationer. Heft I. 4to. Christiania, 1882.

NORWEG. COMMISSION DER EUROP. GRADMESSUNG, CHRISTIANIA.

*Movimento de Poblacion habido en los Pueblos de la Republica de Guate-
mala durante el año de 1881.* 4to. Guatemala, 1882.

SECRETARIA DE FOMENTO, GUATEMALA.

*Congrès National des Sociétés Françaises de Géographie. 4^e Session,
Lyon, 1881. Compte Rendu des Séances.* 8vo. Lyon, 1882.

SOCIÉTÉ DE GÉOGRAPHIE DE LYON.

*Norwegian North Atlantic Expedition, 1876-78. VI: Zoology, Holothu-
rioidea, by D. C. Danielssen and Johan Koren. VII: Zoology, Anneli-
da, by G. Armauer Hansen.* 4to. Christiania, 1882.

THE COMMITTEE, NORWEGIAN NORTH ATLANTIC EXPEDITION.

PERIODICALS PURCHASED.

Benares. *Fallon's New English-Hindustani Dictionary,—Part XI.*

Berlin. *Deutsche Litteraturzeitung,—Vol. III, Nos. 40-43.*

———. *Journal für die reine und angewandte Mathematik,—Vol. XCIII,
No. 3.*

Calcutta. *Indian Medical Gazette,—Vol. XVII, No. 12, December, 1882.*

Edinburgh. *Edinburgh Review,—Vol. CLVI, No. 320, October, 1882.*

Geneva. *Archives des Sciences Physiques et Naturelles,—Vol. VIII,
No. 11.*

- Giessen. Jahresbericht über die Fortschritte der Chemie,—Part I, 1881.
- Göttingen. Gelehrte Anzeigen,—Nos. 48-50.
- . Nachrichten,—No. 21.
- Leipzig. Annalen der Physik und Chemie,—Vol. XVII, No. 12.
- . Beiblätter,—Vol. VI, No. 10.
- . Hesperos,—Vol. II, Nos. 33-35.
- . Litterarisches Centralblatt,—Nos. 41-44.
- London. Annals and Magazine of Natural History,—Vol. X, No. 59, November, 1882.
- . Chemical News,—Vol. XLVI, Nos. 1199-1201.
- . Entomologist,—Vol. XV, No. 234, November, 1882.
- . Entomologist's Monthly Magazine,—Vol. XIX, No. 222, November, 1882.
- . Journal of Botany,—Vol. XI, No. 239, November, 1882.
- . Journal of Science,—Vol. IV, No. 107, November, 1882.
- . London, Edinburgh and Dublin Philosophical Magazine,—Vol. XIV, No. 89, November, 1882.
- . Messenger of Mathematics,—Vol. XII, No. 5, September, 1882.
- . Nineteenth Century,—Vol. XII, No. 69, November, 1882.
- . Publishers' Circular,—Vol. XLV, No. 1084.
- . Quarterly Journal of Microscopical Science,—Vol. XXII, No. 88, October, 1882.
- . Quarterly Review,—Vol. CLIV, No. 308, October, 1882.
- . Society of Arts,—Journal, Vol. XXXI, Nos. 1565-1567.
- . The Ibis,—Vol. VI (4th Series), No. 24, October, 1882.
- . Westminster Review,—Vol. CXVIII, No. 134, October, 1882.
- New Haven. American Journal of Science,—Vol. XXIV, No. 142.
- Paris. Comptes Rendus,—Vol. XCV, Nos. 19-21.
- . Revue Critique,—Vol. XIV, Nos. 46-48.
- . Revue des deux Mondes,—Vol. LIV, No. 2.
- . Revue Scientifique,—Vol. XXX, Nos. 21-23.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR FEBRUARY, 1883.

The Annual Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th February, 1883, at 9 p. m.

The Hon'ble H. J. REYNOLDS, President, in the Chair.

According to the Bye-laws of the Society, the President ordered the voting papers to be distributed for the election of Officers and Members of Council for 1883, and appointed Dr. H. Cayley, and Mr. G. A. Grierson, Scrutineers.

The PRESIDENT then called upon the Secretary to read the Annual Report.

ANNUAL REPORT FOR 1882.

The Council have much pleasure in submitting the following Report on the Society's affairs for the past year.

During the year 1882, 18 gentlemen were elected Ordinary Members of the Society: 18 members withdrew, 4 died and 1 was removed from the Member List in accordance with the provisions of Rule 40. Eight other names have been removed from the Member List under the following circumstances. It was found that there were on this list many names of gentlemen who had paid no subscriptions for many years, and had held no communications with the Society, their addresses in many cases not being known. Their names had been retained on the list as they had never signified their wish to withdraw, and it has not been

customary to enforce the rules relating to arrears of subscription very strictly. The presence of names of this description on the Society's list needlessly complicated the Society's accounts, and during the present year the officers of the Society have made an attempt to clear the list of such merely nominal members. All such gentlemen whose addresses could be obtained have been communicated with, and the result has been that several have recommenced paying their subscriptions, whilst others have preferred that they should be considered to have withdrawn years ago when communications between them and the Society ceased. In other cases the Council has ordered the names of such gentlemen to be struck off the list. The nett result has been that eight names have in this way been erased from the list. This, however, represents no loss to the Society, as the gentlemen in question had long ceased to hold communication with, or pay subscriptions to, the Society: and it may be held as a considerable set-off against this loss that several such members have resumed their interest in, and connection with, the Society, and have begun again to pay their subscriptions, so that they are virtually new members. The nett diminution of the number of names on the Member List has thus been 13, the total number of members being 337 on December 31st, 1882, as against 350 at the close of the preceding year. This decrease is, as will be seen, partly the consequence of increased activity in attending to the Society's financial affairs: and the following table, giving the number of members and the total amounts realised from subscriptions during the preceding 6 years, will show that, whilst the number of members has diminished slightly during the last two years, the payments received for subscriptions have increased very considerably.

Year.	Paying.				Non-Paying.			Grand Total.	Amount of subscriptions realised.
	Resident	Non-Resident.	Foreign.	Total.	Life.	Absent.	Total.		
1877	113	163	14	290	9	46	55	345	Rs. 7,200
1878	117	153	15	285	13	29	42	327	" 7,006
1879	111	154	16	281	12	36	48	329	" 7,421
1880	112	185	15	312	14	30	44	356	" 7,695
1881	110	168	17	295	14	41	55	350	" 8,798
1882	101	155	18	274	15	48	63	337	" 8,672

It will be seen from this table that, of the 337 members on the 31st December, 1882, 101 are Resident, 155 Non-Resident, 18 Foreign, 15 Life and 48 Non-Subscribing Members. During the year one member, Mr. W. T. Blanford, compounded for his future subscriptions.

Two vacancies in the list of Honorary Members were caused by the deaths of Mr. Charles Darwin and Dr. John Muir, and one in the list of Corresponding Members by the death of Herr Baron H. von Schlagintweit-Sakünlunski. Mr. H. N. Giles and Mr. F. A. de Roepstorff were elected Associate Members. The 4 Ordinary Members who died during the year were Messrs. Louis Schwendler, R. Scott, Charles J. Bandow and M. G. Stewart. Mr. L. Schwendler had been for many years an active member of the Society, having served on the Council and on the Natural History and Physical Science Committees. He had also contributed several valuable papers to the Society's publications. It was mainly owing to Mr. Schwendler's exertions that the Zoological Gardens were instituted at Calcutta, and brought to their present success. The Committee of the Zoological Gardens purpose raising a memorial to Mr. L. Schwendler, and the Council of the Society, in order to mark their sense of Mr. Schwendler's services, were happy to make a contribution for this purpose from the Society's funds.

Indian Museum.

On Sir Ashley Eden leaving India in April, the Hon. H. J. Reynolds, who succeeded him as President, became an *ex-officio* Trustee of the Indian Museum. Mr. J. Eliot and Dr. A. F. R. Hoernle have acted as Trustees throughout the year. Mr. C. H. Tawney and Mr. H. Beverley resigned their seats on the Board of Trustees on their leaving India early in the year, and Major J. Waterhouse and Dr. H. W. M'Cann were elected the representatives of the Society on the Board in their stead.

Two presentations were made to the Museum under Section 12 of Act XXII of 1876; (1) A collection of fragments of sculpture referred to in the Proceedings of the Asiatic Society for July, 1879, presented by Mr. H. Rivett-Carnac; (2) A collection of butterflies from the South Andamans, presented by Mr. F. A. de Roepstorff.

Finance.

The accounts have been kept up during the past year in the mode introduced in the year 1880. The Summaries (given in the Appendix) are also presented in the form that was approved and adopted at that time.

An estimate of income and expenditure was prepared last year and laid before the Society at its annual meeting. Every effort has been made to keep the expenditure within the limits of the sanctioned estimate, and to prevent the recurrence of a deficit similar to that of last year. Unfortunately these efforts have not been successful in consequence of the settlement of two years' book accounts with Messrs. Trübner and Co. during the past year. This arose from various delays in the settlement of

the accounts and loss of explanatory letters sent from Calcutta to Messrs. Trübner and Co. Such delays give rise to considerable confusion in the accounts, and every effort will be made in future to secure an annual settlement of accounts with Messrs. Trübner and Co.

The actual receipts during the year were Rs. 18,762-11-1 and were Rs. 1,862-11-1 in excess of the anticipated revenue of Rs. 16,900. This is, however, almost entirely due to the increase under the head "Sale of Periodicals." The estimated amount was Rs. 1,000, whilst the amount realized includes the adjustment of two years' accounts with Messrs. Trübner and was Rs. 2,790-14-5.

The amount realized by subscriptions was Rs. 428 in excess of the estimate. On the other hand an unusually small number of new members joined the Society. The amount derived from admission fees was only Rs. 480 or Rs. 520 less than the estimate.

The actual expenditure of the year was Rs. 18,412-6-3. The estimated amount was originally Rs. 16,758, but it was afterwards suggested by the Financial Committee and approved by the Council that the amount sanctioned for publications (*viz.*, Rs. 6,300) should be diminished by Rs. 1,000 and thus partly repair the excessive expenditure for printing charges of the preceding year. As the amount finally sanctioned was Rs. 15,758, the actual expenditure was Rs. 2,654-6-3 in excess of this estimate. The expenditure was in nearly every head within the estimated amount. The only excessive expenditure was on "Books." The estimated expenditure under this head was Rs. 1,500 and the actual Rs. 5,062-0-3. The cause of this has been already explained as mainly due to the settlement of two years' accounts with Messrs. Trübner and Co.

The cost of printing the Society's publications has been unusually small during the past year. The excessive expenditure under this head during the previous year was noticed in last year's report, and measures were afterwards taken to control this expenditure more effectually than hitherto. These have worked satisfactorily. The expenditure has, in the case of all the publications, been within the estimate and in the case of the Journal, Part II, there has been a saving of nearly Rs. 1,200. The amount unexpended for the two Parts of the Society's Journal and for the Proceedings, by a recent rule passed by the Council, does not lapse, but will be added to the amount sanctioned for the present year 1883. By this plan it is hoped that on the one hand effective control will be kept over the expenditure under this head, and that there will be sufficient elasticity in the arrangement to enable the Secretaries to utilize this portion of the Society's grants to the full and in the most effective manner.

The following is the estimate of income and expenditure for the year 1883.

EXPENDITURE.

Salaries,	..	..	..	..	Rs. 4,580
Commission,	..	..	..	..	350
Stationery,	..	..	..	..	200
Lighting,	..	..	..	..	80
Building,	..	..	..	..	300
Taxes, ..	..	..	..	..	720
Postage,	..	..	..	..	700
Freight,	..	..	..	..	50
Meetings,	..	..	..	..	65
Contingencies,	..	..	..	..	350
Books, ..	..	..	..	..	2,000
Local Periodicals,	..	..	..	..	60
Binding,	..	..	..	..	350
Coins, ..	..	..	..	..	50
Journal, Part I, ..	..	..	..	..	2,100
Journal, Part II,	..	..	..	..	2,100
Proceedings,	..	..	..	..	1,100
Printing of Circulars, &c., ..	..	..	..	..	300
					<hr/>
					Rs. 15,455

RECEIPTS.

Subscriptions,	..	..	..	Rs. 8,250	0	0
Sale of Publications, ..	..	..	..	1,000	0	0
Interest on Investment,	..	..	..	6,250	0	0
Due from O. P. Fund,	..	..	..	698	0	0
<hr/>						
				Rs. 16,198	0	0

London Agency.

The balance in Messrs. Trübner and Co.'s favour at the end of 1881 was £14-9-10. The sales of the Society's publications effected by Messrs. Trübner amounted to £161-14-3 and of the Bibliotheca Indica to £69-5-10.

Thirteen Invoices of books purchased and of publications of various Societies sent in exchange have been received during the year 1882, the money value of the books purchased being £157-3-1.

The number of copies of parts of the Journal, Proceedings and Bibliotheca Indica sent to Messrs. Trübner and Co. for sale was 227, 240 and 613 respectively.

Conversazione.

The Society gave a *Conversazione* on March 6th in its rooms in Park Street, which was largely attended and was a great success. H. E. the Viceroy, the Patron of the Society, honoured the Society with his presence and many objects of scientific and literary interest were exhibited. The thanks of the Society are due to Sir Ashley Eden, the President, who generously defrayed all the expenses connected with the *Conversazione*: and to those gentlemen, members and others, who contributed to its success by the loan of objects of interest and in other ways.

Library.

A large number of additions has been made to the Library during the past year, the total number of volumes or parts of volumes being 2,362, of which 1,439 were presented or received in exchange for the Society's publications and 923 were purchased.

The Council have to express their regret that fresh difficulties have occurred to delay the publication of the Catalogue, so long looked forward to. The Britannia Press, to which the work had been entrusted, proved unable to carry it out according to the contract. The irregularity in the submission of proofs proved so serious that the Council decided to withdraw the work from this Press, and have made arrangements with the Caledonian Press which there is every reason to hope will lead to more satisfactory results. One hundred and sixty pages had already been printed off: but in order to secure uniformity and an improved style, the Council has instructed the Caledonian Press to print the whole from the beginning, and it is hoped that the work will be completed in 4 or 5 months. This delay in the publication of the Catalogue, the want of which is so seriously felt, is a cause of great regret to the Council, but it is due to circumstances which it was impossible to foresee.

The Munshi engaged to catalogue the Arabic and Persian books and MSS. made so little progress in his work that the Council were obliged to dispense with his services, and are now making arrangements for engaging more efficient assistance.

Publications.

The second part of Moore's "*Descriptions of New Indian Lepidoptera*" was received from England in June, and has now been distributed to the members. This part contains 111 pages of quarto letter press and 2 plates.

Four Nos. of Part I, and 3 of Part II, of the Journal were published during the year containing 229 and 66 pages of letter press and 15 and 3 plates respectively: also Extra No. to the Journal, Part I, for 1882,

(Introduction to the Maithili Language), containing 267 pages. Of the Proceedings, Nos. 9 and 10 of 1881 and Nos. 1—8 of 1882 were issued from the Press, containing 187 pages and 3 plates.

The analytical catalogue of the invaluable collection of Nepalese Buddhist Sanskrit MSS. presented to the Society by Mr. B. H. Hodgson, which Dr. R. L. Mitra has been engaged in compiling for several years, was published in October. The collection consists of 86 bundles of MSS., comprising 144 separate works. The Council feel that the Society owes Dr. R. L. Mitra a great debt of gratitude for the time and attention he has devoted to this work, resulting in the issue of a most useful handbook to this interesting collection.

Building.

The whole of the interior of the building has been examined and new beams and burgahs have been substituted for the old ones, wherever it was found necessary, at a cost of Rs. 617-0-9. The total amount spent on repairs during the year was Rs. 637-0-9.

Coin Cabinet.

Altogether 91 coins were acquired during the past year: of these, 90 were presented and 1 was purchased. The latter is a silver coin found in a village in the Manpur Pergunnah.

Among the presentations, there are 9 gold, 62 silver, 14 copper and 5 lead coins. Details will be found on pp. 56, 108, 114, 138—141 of the Proceedings of the Society for 1882. But a set of 55 specimen coins (7 gold, 34 silver, 14 copper), struck from the old dies in the Calcutta Mint and presented to the Society by the Governor-General in Council through Colonel J. F. Tennant, Master of the Mint, deserves special mention.

Secretary's Office.

Dr. A. F. R. Hoernle, Dr. H. W. M'Cann and Mr. J. Eliot have continued to act as Philological Secretary, General Secretary and Treasurer respectively throughout the year. Mr. J. Wood-Mason continued Natural History Secretary till September when he left India on sick leave, and Dr. J. Scully was appointed Natural History Secretary in his place.

Mr. W. A. Bion has continued to hold the post of Assistant Secretary, and his services have given every satisfaction to the Society's Honorary Officers, who are to a great extent dependent upon him for the general work of the office. Mr. E. S. Andrews and Babu Nritya Gopal Basu have continued to act as Assistant Librarian and Cashier respectively. The copyist has, in addition to current work, completed the indexing of the old correspondence of the Society as far back as the beginning of the year

1876, which will effect a great saving of time and trouble in all references to the previous business of the Society.

Bibliotheca Indica.

Eighteen fasciculi were published during the year, twelve in the Sanskrit and six in the Arabic-Persian series. They belong to ten different works, of which three are in the Arabic-Persian, and seven in the Sanskrit series. One work of the former series, the *Ṭabaqāt-i-Nāṣirī*, has been completed.

Among these publications there are four English Translations; viz. of the *Kathā Sarit Sāgara*, the *Lalita Vistara*, the *Ṭabaqāt-i-Nāṣirī*, and the *Pātanjala Yoga Sūtra*. The remainder are text editions. Of the *Pātanjala Yoga Sūtra*, both text and translation are being published *pari passu*.

A. Arabic-Persian Series.

1. Of the *Iṣābah* or Biographical Dictionary of persons that knew Muḥammad, by Ibn Hajar, two fasciculi have been published by Maulvi 'Abdul Hai, Head Professor of the Calcutta Madrassah.

2. Major H. G. Raverty, Bombay Army (retired), has published two fasciculi of his annotated English translation of the *ṬABAQĀT-I-NĀṢIRĪ*. These conclude this valuable work. An index of names of persons and places is in preparation and will be published as soon as practicable.

3. Of the *AKBAERNĀMAH*, edited by Maulvi 'Abdur Raḥīm, two fasciculi have been published.

B. Sanskrit Series.

4. Dr. Rājendralāla Mitra has advanced his edition of the text of the *VĀYU PURĀṆA* by one fasciculus. This is the second of the Society's Series of the *Purāṇas*, a sort of Cyclopædia of Sanskrit Literature. The first is the *Agni Purāṇa*, a complete edition of which has already been published by the same learned editor.

5. The same editor has published two fasciculi of his text and translation of the *YOGA SŪTRA*. The text is accompanied by the commentary of Bhoja Rājā, and an English translation of both the text and commentary; also by an English commentary compiled by the editor himself, including short extracts from the commentaries of Vyāsa, Vijñāna, Bhikṣu and Vachaspati Miśra.

6. The same editor has also issued the second fasciculus of his annotated English translation of the *LALITA VISTARA*, one of the most ancient and important works on the earlier portion of the life of Buddha.

7. Mr. C. H. Tawney, M. A., Principal of the Presidency College, has published the fourth fasciculus of the second volume of his annotated

English translation of the *KATHÁ SARIT SÁGARA* or the Ocean of Streams of Story. This work is the celebrated repository of Indian legends composed from older sources by Somadeva of Kashmir toward the close of the eleventh century. The translator has illustrated the stories by notes, which refer to similar legends current in other collections of folklore.

8. Pandit Satyavrata Sāmaśramī has brought out two fasciculi of his edition of the *NIRUKTA*, the well known glossarial explanation of obscure Vedic terms, together with extracts from various commentaries. This concludes the first volume.

9. Two fasciculi have been published of *HEMĀDRI'S CHATURVARGA CHINTAMANI*, by the joint editors, Pandits Yogeśvara Smṛitiratna and Kāmākhyānātha Tarkaratna. These belong to the fifth part of the work, the *Parīśeṣa Khaṇḍa*, which, however, is the *third* volume of the Society's Series, manuscripts for two parts being wanting.

10. Of the *ĀPASTAMBA ŚRAUTA SŪTRA*, a very rare and important work connected with the Black Yajur Veda, three fasciculi have been issued by Professor R. Garbe of Königsberg, together with the commentary of Rudradatta. These complete the first volume.

The following works are in course of preparation :—

1. The *PRĀKRITA LAKṢHAṆA* by Chāṇḍa, a grammar of the Ancient Prākṛit, edited by Dr. A. F. Rudolf Hoernle. The second fasciculus, containing translation and notes, is nearly ready.

2. The *PRITHVIRĀJ RĀSAU*, by Chānd Bardāī; text and translation by Dr. A. F. Rudolf Hoernle. The first volume of the text is expected to be completed this year.

3. The *KATANTRA*, with the commentary of Dūrga Siṃha, edited with notes and indexes, by Professor Julius Eggeling. One fasciculus, containing the Introduction, remains.

4. An annotated English translation of the *SUS'RUTA*, an ancient Hindū medical work, hardly less important than the *Charaka*, by Dr. U. C. Dutt, Civil Surgeon of Serampore. The first fasciculus will shortly appear.

5. An annotated English translation of the second volume of the *MUNTAKHAḬ-UT-TAWARĪKH* by 'Abdul Qādir, by the Rev. W. H. Lowe, M.A., of Cambridge. The first fasciculus will shortly be issued. The text, in 3 volumes, has already been published by the Society.

6. The *PARĀSABA MĀDHAVA SMṚITI*, edited by Pandit Chandrakānta Tarkālankāra. The first fasciculus will shortly appear.

The following work has been newly sanctioned for publication, and is in course of preparation :

7. The *PARIS'ISHTA PARVAN* or *STAVIRĀVALĪ CHARITRA* by Hemachandra, a Jain work in Sanskrit verse on the history of the first twelve Staviras

or Patriarchs from the death of Mahāvira down to the last Śrutakevalin, edited by Professor H. Jacobi, of Münster. The first fasciculus will come out shortly.

The following works are sanctioned for publication, and will be prepared as soon as practicable :

8. The *BRĪHADDEVATĀ*, a very interesting metrical work of Śaunaka on the deities invoked in the hymns of the Rīg Veda, to be edited by Dr. Rājendralāla Mitra.

9. The *PRĀKRITĀDHYĀYA* of the Saṃkshiptasāra of Kramadīśvara, a grammar of the Prākṛit language with an English translation and a vocabulary, by Dr. Rājendralāla Mitra. The Sanskrit portion has already been printed.

10. The *CHARAKA*, the oldest work on Hindū medicine, to be translated with notes, by Dr. Mahendralāla Sircar.

11. The *NAQĀID* of El Ferazdaq and Jerir ; an extremely interesting work, both from the philological and historical point of view ; text and commentary ; to be edited by Professor Wright of Cambridge (see Proceedings, 1880, p. 65).

12. The *LĀMĪYYET-EL-ARAB*, text with two English translations, one in prose and the other in verse, by Mr. C. J. Lyall, B. A., C. S.

The following is a detailed list of the publications issued during 1882:—

Arabic-Persian Series.

1. *ISĀBAH*, edited by Maulvi 'Abdul Hai, of the Calcutta Madrasah, Nos. 244, 245* (old series), fasc. XX, XXI, (Vol. III, Nos. 3, 4).

2. *ṬABAQĀT-I-NĀSIRĪ*, by Abū 'Umr-i-'Uṣmān, translated by Major H. G. Raverty, Nos. 394, 395, Fasc. XIII, XIV.

3. *AKBARNĀMAH*, edited by Maulvi 'Abdur Raḥīm, of the Calcutta Madrasah, Nos. 484, 485, Vol. III, Fasc. II.

Sanskrit Series.

4. *VĀYU PURĀṆA*, a system of Hindū Mythology and tradition, edited by Dr. Rājendralāla Mitra, C. I. E., No. 476, Vol. II, Fasc. II.

5. *PĀTANJALA YOGA SŪTRA*, or the Yoga Aphorisms of Patanjali, with the commentary of Bhoja Rājā, and an English translation, by Dr. Rājendralāla Mitra, C. I. E., Nos. 478, 482, Fasc. II, III.

6. *LALITA VISTARA* or memoirs of the early life of Śākya Siṃha, translated from the original Sanskrit, by Dr. Rājendralāla Mitra, C. I. E., No. 478, Fasc. II.

7. *KATHĀ SARIT SĀGARA* or Ocean of the Streams of Story, translated from the Sanskrit, by C. H. Tawney, M. A., No. 472, Vol. II, Fasc. X.

8. *NIRUKTA*, with commentaries, edited by Pandit Satyavrata Sāmaśramī, Nos. 477, 480, Vol. I, Fasc. V, VI.

* No. 253 in last year's Report is a misprint for 243.

9. CHATURVARGA CHINTAMANI, by Hemádri, edited by Pandits Yogeshvara Smritiratna and Kámákhyánátha. Tarkaratna, Nos. 475, 481, Vol. III, Fasc. II, III.

10. APASTAMBA ŚRAUTA SŪTRA, belonging to the Black Yajurveda, with the commentary of Rudradatta, edited by Dr. Richard Garbe, Professor of Sanskrit, Königsberg, Nos. 474, 479, Fasc. III, IV.

List of all Societies, Institutions, &c., to which the publications of the Asiatic Society have been sent during the year, or from which publications have been received.

*Allahabad:—Editor, Pioneer.

†Amsterdam:—Royal Zoological Society.

*Baltimore:—Johns Hopkins University.

*Batavia:—Society of Arts and Sciences.

*———:—Kon. Natuurkundige Vereeniging in Nederlandsch-Indië.

*Berlin:—Royal Academy of Sciences.

§———:—Entomologische Verein.

*Bombay:—Bombay Branch, Royal Asiatic Society.

*———:—Editor, Indian Antiquary.

*———:—Editor, Times of India.

†Boston:—Natural History Society.

†Bordeaux:—L'Académie Impériale des Sciences, Belles-Lettres et Arts.

§———:—Société de Géographie Commerciale.

*———:—Société Linnéene.

*Brunswick:—Verein für Naturwissenschaft.

†Brussels:—L'Académie Royale des Sciences.

*———:—Musée Royal d' Histoire Naturelle de Belgique.

*———:—Société Royale Malacologique de Belgique.

§Buda Pest:—Royal Hungarian Academy of Sciences.

*Buenos Ayres:—Public Museum.

*Calcutta:—Agri-Horticultural Society of India.

*———:—Geological Survey of India.

*———:—Editor, Englishman.

*———:—Editor, Hindoo Patriot.

*———:—Editor, Indian Daily News.

*———:—Editor, Indian Mirror.

*———:—Indian Museum.

†———:—Mahommedan Literary Society.

†———:—Public Library.

*———:—Tuttobodhini Shova.

†———:—University Library.

†Cambridge:—University Library.

- *Cassel :—Die Verein für Naturkunde.
- *Cherbourg :—La Société Nationale des Sciences Naturelles.
- †Christiania :—University Library.
- *Colombo :—Ceylon Branch, Royal Asiatic Society.
- *Copenhagen :—La Société Royale des Antiquaires du Nord.
- †Cuttack :—Cuttack Library.
- †Dehra Dun :—Great Trigonometrical Survey.
- §Dresden :—Verein für Erdkunde.
- §—— :—Naturwissenschaftliche Gesellschaft Isis.
- *Dublin :—Royal Dublin Society.
- *—— :—Royal Irish Academy.
- §—— :—Geological Society of Dublin.
- *Edinburgh :—Royal Society.
- §—— :—Botanical Society.
- *Florence :—Società Italiana di Anthropologia e di Etnologia.
- †Frankfurt :—Senkenbergische Naturforschende Gesellschaft.
- *Geneva :—Société de Physique et d' Histoire Naturelle.
- †Genoa :—Museo Civico di Storia Naturale.
- §Hague :—Koninklijk Instituut voor de Taal-Land- en Volkenkunde van
Nederlandsch-Indië.
- *Halle :—Die Kais. Leopoldinisch-Carolinische Akademie.
- *Helsingfors :—Société des Sciences de Finlande.
- †Königsberg :—Die physikalisch-ökonomische Gesellschaft.
- *Lahore :—Editor, Civil and Military Gazette.
- †—— :—Agricultural Society.
- *Leipzig :—Deutsche Morgenländische Gesellschaft.
- †Leyden :—Royal Herbarium.
- *Liège :—La Société Géologique de Belgique.
- *—— :—La Société Royale des Sciences.
- §Lisbon :—Geographical Society.
- †Liverpool :—Literary and Philosophical Society.
- *London :—Anthropological Institute.
- *—— :—Editor, Academy.
- *—— :—Editor, Athenæum.
- *—— :—British Museum.
- *—— :—Geological Society.
- *—— :—Institution of Civil Engineers.
- *—— :—Institution of Mechanical Engineers.
- *—— :—Editor, Nature.
- *—— :—Linnean Society.
- *—— :—Royal Asiatic Society of Great Britain and Ireland.
- *—— :—Royal Astronomical Society.

- *London.—Royal Geographical Society.
- †———:—Royal Institution.
- *———:—Royal Microscopical Society.
- *———:—Royal Society.
- *———:—Society of Telegraph Engineers.
- *———:—Statistical Society.
- *———:—Zoological Society.
- *Lyon:—La Société d' Agriculture, Histoire Naturelle et Arts Utiles.
- *———:—Le Muséum d' Histoire Naturelle.
- *———:—La Société d' Anthropologie.
- §———:—Société de Géographie.
- *Madras:—Literary Society.
- *———:—Government Central Museum.
- †Manchester:—Literary and Philosophical Society.
- §Melbourne:—Royal Society of Victoria.
- *Moscow:—Société Impériale des Naturalistes.
- *Munich:—Die k. bayerische Akademie der Wissenschaften.
- *———:—Editor, Repertorium für Experimental-Physik.
- †Netherlands:—Royal Society.
- *New Haven:—Connecticut Academy of Arts and Sciences.
- §———:—American Oriental Society.
- *Ottawa:—Geological and Natural History Survey of the Dominion of Canada.
- †Oxford:—Bodleian Library.
- *Paris:—La Société de Géographie.
- *———:—La Société d' Anthropologie.
- *———:—Société Asiatique.
- †———:—Imperial Library.
- *———:—La Société Zoologique.
- *Philadelphia:—Academy of Natural Sciences.
- §———:—American Philosophical Society.
- *Pisa:—Società Toscana di Scienze Naturali.
- §Rome:—Società degli Spettroscopisti Italiani.
- §———:—R. Accademia dei Lincei.
- †St. Petersburg:—Imperial Library.
- *———:—Russian Geographical Society.
- *———:—L'Académie Impériale des Sciences.
- §———:—Hortus Petropolitanus.
- †San Francisco:—Californian Academy of Arts and Sciences.
- *Schaffhausen:—Swiss Entomological Society.
- *Shanghai:—North China Branch, Royal Asiatic Society.
- *Simla:—United Service Institution of India.

- †Stettin :—Entomological Society.
 †Stockholm :—Royal Swedish Academy of Sciences.
 *Sydney :—Royal Society of New South Wales.
 *Trieste :—Società Adriatica di Scienze Naturali.
 *Turin :—Reale Accademia delle Scienze.
 †Ulwar :—Ulwar Library.
 *Vienna :—Die Anthropologische Gesellschaft.
 *——— :—Die k. k. Akademie der Wissenschaften.
 *——— :—Die k. k. geologische Reichsanstalt.
 *——— :—Die k. k. zoologisch-botanische Gesellschaft.
 †Washington :—Commissioners of the Department of Agriculture.
 *——— :—Smithsonian Institution.
 *——— :—United States Geological and Geographical Survey of the Territories.
 *——— :—United States Geological Survey.
 *Wellington :—New Zealand Institute.
 *Württemberg :—Natural History Society.
 *Yokohama :—Asiatic Society of Japan.
 *——— :—German Oriental Society.
 *Zagreb :—Archæological Society.

ABSTRACT OF PROCEEDINGS OF COUNCIL DURING 1882.

January 26th. Ordinary Meeting.

Letters were read from the Natural History Society of Montreal and the Société des Naturalistes of Moscow inviting the Society to take part in Congresses to be held in Montreal and Moscow. It was resolved that the invitations should be acknowledged with thanks, and that enquiries should be made whether any members of the Society were able to accept these invitations.

An exchange of publications was sanctioned with the United States Geological Survey.

At the request of the Registrar of the Panjab University College, the Council agreed to present the Panjab University College with such of the past publications of the Bibliotheca Indica as were available, in return for such of the publications of the Panjab University College as were likely to be of use in the Society's Library, and the Philological Secretary was requested to select such works.

* Societies, &c., which have received the Asiatic Society's publications, and have sent their publications in return.

† Societies, &c., which have received the Asiatic Society's publications, but have sent none in return.

‡ Societies, &c., whose publications have been received, but to which nothing has been sent in return.

Letters were read from Mr. H. Beverley and Mr. C. H. Tawney announcing their departure from India, and tendering their resignations as members of Council and Trustees of the Indian Museum on behalf of the Society. Major J. Waterhouse and Dr. H. W. M'Cann were appointed their successors as Trustees of the Indian Museum.

At the request of Mr. H. Rivett-Carnac, the stone carvings exhibited at the meeting of the Society held in July, 1879, were ordered to be transferred to the Indian Museum.

A request from Mr. A. Grote that he should be allowed to exceed the grant of £140, for Part II of Moore's "Descriptions of Lepidoptera," on the understanding that the cost of Part III should be reduced by the same amount, was acceded to.

A Committee was appointed to arrange for a *Conversazione* to be held during the 3rd week of February and a vote of thanks was passed to Sir A. Eden, the President, for his generous offer to defray all expenses connected with it.

It was resolved to subscribe for two copies of each work published by the Pali Text Society.

The Annual Report was submitted and approved, and a special meeting of the Council was ordered to be called for the 31st January to pass the Annual Accounts.

31st January. Special Meeting.

The Annual Accounts were examined and passed.

The Treasurer drew attention to the excess of expenditure over income, and pointed out that it was mainly due to the expenses of publishing the Society's Journal and Proceedings. It was resolved that the Finance Committee should be requested to draw up rules for controlling the expenditure on publications.

23rd February. Ordinary Meeting.

A letter was read from the Secretary to the Government of Bengal, forwarding a copy of a letter from the Secretary to the Government of India, Home Department, and requesting that the Lieutenant-Governor may be favoured with an expression of the opinion of the Asiatic Society regarding the propriety of discontinuing the search for ancient Sanskrit MSS. in Bengal. The correspondence was referred to the Philological Committee for their opinion.

On the recommendation of the Natural History Secretary, it was agreed to exchange publications with the Société des Sciences de Finlande, and to exchange the Society's Proceedings for the Brunswick Natural History Society's "Jahresbericht."

Letters were read from Sir William Thomson, Professor R. v. Roth and Dr. William Wright, thanking the Society for having elected them Honorary Members.

A List, supplied by the Foreign Department, giving the names of native Chiefs to whom the publications of the Bibliotheca Indica might suitably be distributed gratuitously, was submitted; and it was resolved that the Sanskrit works should be sent to the Hindu Chiefs and the Arabic-Persian works to the Mahomedan Chiefs, and Dr. Hoernle and Dr. Mitra were requested to select from the list Chiefs to whom both Series could advantageously be sent.

A recommendation from the Finance Committee that the decayed beams and burgahs in the rooms downstairs should be renewed in accordance with an estimate submitted by Messrs. Mackintosh, Burn and Co. was adopted.

A request from Babu Tarini Prosad Neogy, that the Society should help him in his project of publishing various obsolete Sanskrit MSS., was referred to the Philological Committee.

The Secretary reported that he had forwarded to the Secretary to the Government of Bengal 5 copies of Dr. Mitra's Report on the progress made in the discovery and preservation of Sanskrit MSS. during the year 1880-81.

Mr. A. Pedler was elected a member of the Council.

The various Committees for the ensuing year were elected.

The Secretary reported that the following resolution had been passed by the Finance Committee with regard to the sum annually allowed for publications:

"The Finance Committee recommend that in future an annual sum be assigned to each Secretary for the publication for which he is responsible, which sum is not on any account to be exceeded; and that any saving on this be set apart for the same Secretary's publication for the ensuing year, and not appropriated to any other purpose. And that the sum of Rs. 6300, the estimated cost of publications for the ensuing year, be assigned as follows:

"Rs. 1000 to go towards defraying the deficit in last year's accounts.

"Rs. 1800 to the Journal Part I, (Philology, Antiquities &c.)

"Rs. 2500 to the Journal Part II, (Natural History, &c.)

"Rs. 1000 to the Proceedings."

The resolution was adopted with the following addition to the general principle:

"That any special subscription for extra publications in either branch be specially placed to the credit of that branch and not appropriated to any other purpose."

The Secretary submitted a list of members from whom considerable arrears were due in the Society's books and stated reasons for his opinion that in the majority of cases these members could not justly be required to pay the amounts against their names. The Secretary received instructions as to the course to be adopted in each case.

The Secretary reported that it had been found advisable to postpone the *Conversazione* to the 6th of March.

30th March. Ordinary Meeting.

The publications of the Bibliotheca Indica series were ordered to be distributed to 30 native Chiefs and States, selected by Dr. Hoernle and Dr. Mitra in accordance with the order passed at the last meeting.

A letter was read from Major H. G. Raverty stating that the preparation of the index for his translation of the *Ṭabaqāt-i-Nāṣirī* would cost in England £50. The Philological Secretary was requested to ascertain at what cost the index could be prepared in this country.

Read the minutes of the Library and Physical Science Committees on a proposal of Col. J. F. Tennant's that works on Physical subjects be no longer purchased for the Library. The Council were of opinion that it would be undesirable to lay down any general rule, except that the purchase of costly books available elsewhere should be as much as possible avoided.

At the suggestion of Mr. H. B. Medlicott, it was agreed to recommend the Society to subscribe Rs. 50 to the fund being raised for a memorial to Mr. L. Schwendler at the Zoological Gardens.

27th April. Ordinary Meeting.

A letter was read from Professor H. Helmholtz thanking the Society for having elected him an Honorary Member.

A letter was read from Mr. F. A. de Roepstorff presenting his collection of Andamanese Butterflies to the Society, and it was ordered that the thanks of the Society be conveyed to him.

It was resolved, on the recommendation of the Natural History and Philological Secretaries respectively, that Mr. F. A. de Roepstorff and Mr. Herbert Giles should be proposed for election as Associate Members.

The President, Sir A. Eden, having left India, the Hon'ble H. J. Reynolds was elected President, Mr. H. F. Blanford, Vice-President and Mr. A. W. Croft, Member of Council, subject to the confirmation of next Ordinary General Meeting.

The Philological Secretary reported that Babu Mohendralala Sen had offered to prepare the index for Major Raverty's translation of the *Ṭabaqāt-i-Nāṣirī* for Rs. 150. It was resolved that Major Raverty should be communicated with on the subject.

The Secretary reported that Mr. W. T. Blanford had compounded for his future subscriptions by a payment of Rs. 160.

1st June. Ordinary Meeting.

An exchange of publications was sanctioned with the Société Malacologique de Belgique.

A letter was read from the Under-Secretary to the Government of Bengal stating that His Honor the Lieutenant-Governor approved of the manner in which the Oriental Publication and Sanskrit MSS. grants had been applied during the past year.

A revised list supplied by the Government of India, of individuals and institutions to whom the future Nos. of the notices of Sanskrit MSS. should be sent, was submitted and the distribution of the future Nos. of the "Notices" was ordered to be made in accordance with this list.

On the recommendation of the Philological Committee, it was resolved that the Government should be informed that the Society is of opinion that the search for Sanskrit MSS. in Bengal should be continued for at least five years longer.

Read the minutes of the Philological Committee on letters from Professor Hermann Jacobi and Dr. E. Hultzsch, offering an edition of the *Parīśiṣṭaparvan* and of the *Kulārṇava* respectively for publication in the *Bibliotheca Indica*. It was ordered that Dr. Jacobi's work should be accepted, and that Dr. Hultzsch's proposal should be again referred to the Philological Committee.

29th June. Ordinary Meeting.

A letter was read from the editor of the Civil and Military Gazette, Lahore, asking if the Society's publications could be sent to him for review. The request was acceded to.

A letter was read from Mr. A. Grote announcing the publication of Part II of Moore's "*Lepidoptera*" and giving an account of the sums expended on it.

A proposal made by the Musée Royal d' Histoire Naturelle de Belgique, that the Society should send all its publications in return for a complete set of the Museum's publications, was agreed to.

The Philological Secretary enquired what was to be done with Dr. Charles's manuscript translation of the "*Suśruta*," which had been returned by Dr. Uday Chand Dutt as being "utterly worthless" for his purpose. It was resolved that Dr. D. B. Smith and Dr. R. Harvey should be communicated with on the matter, and that they should be informed that the Society already has a translation of the work, by Dr. U. C. Dutt, in the press.

On the recommendation of the Finance Committee it was resolved that the advertisement of the monthly meetings in the daily newspapers

should be discontinued, and that the annual meeting should be advertised only once, at least 7 days before the day for the meeting.

27th July. Ordinary Meeting.

An exchange of the Proceedings and Part II of the Journal for the "Reports of Progress" of the Geological and Natural History Survey of Canada was sanctioned.

The Philological Secretary was requested to arrange for the preparation and printing of the Index for Major Raverty's translation of the "Ṭabaqāt-i-Nāṣirī," in this country; and it was ordered to convey the best thanks of the Society to Major Raverty for his able and valuable translation.

A letter was read from Professor Chas. Lanman of Harvard College, Cambridge, (U. S.), thanking the Society for sending the Bibliotheca Indica to Harvard College, and, in his capacity of Secretary to the American Philosophical Association, presenting the first 12 Volumes of the Transactions of the Association to the Society. The presentation was accepted with thanks.

On the recommendation of the Philological Committee, Dr. E. Hultzsch's offer of an edition of the 'Kulārnava Tantra' for publication in the Bibliotheca Indica was declined, on the ground that an edition of the work is already in course of publication in Calcutta.

A recommendation of the Finance Committee, that the excess amount spent on the Blochmann Bust over the sum collected should be charged to the general account, was sanctioned.

A proposal made by Mr. Wood-Mason, that the Society should subscribe for Dobson's "Monograph of the Insectivora" and Distant's "Rhopalocera Malayana," was agreed to.

31st August. Ordinary Meeting.

Dr. A. Barclay was ballotted for and elected an Ordinary Member, in accordance with Rule 7.

An offer made by the Meteorological Reporter to the Government of India to supply the Society with a copy of the "Washington International Weather Bulletin" was accepted with thanks.

On the recommendation of the Natural History Secretary, an exchange of publications with the New Zealand Institute was sanctioned.

On the recommendation of the Philological Secretary, the services of the Maulvi specially engaged for cataloguing the Arabic and Persian books and MSS_{es} were dispensed with and the question of the appointment of a successor was postponed to the next meeting.

28th September. Ordinary Meeting.

A letter was read from the Secretary to the Government of India,

Home Department, stating that Government cannot give away any copies of the Parliamentary papers and returns relating to India, nor can they ask the Secretary of State to supply them except on payment, but that the Home Department can lend the Society a set of these papers on deposit, on the understanding that they can call for any if required, or, if necessary, recover the whole at any time. It was resolved that the loan of a set of such papers should be accepted under these conditions.

A letter was read from Colonel J. F. Tennant, Master of the Mint, stating that the Government of India had sanctioned the grant to the Asiatic Society of a set of specimens of the old coins struck at the Calcutta Mint, and forwarding a set with a list. It was resolved that, in acknowledging the receipt of these coins, Col. Tennant should be specially thanked for obtaining sanction from Government to present them to the Society; and that a list of the coins should be published in the "Proceedings."

The Philological Secretary was requested to engage a Maulvi for the purpose of completing the catalogue of Arabic and Persian books and MSS., payment to be made monthly according to work done.

Dr. J. Scully was re-elected a member of the Natural History Committee.

Mr. J. Wood-Mason, the Natural History Secretary having left for England, it was ordered that Mr. R. Lydekker be asked to undertake the duties of Natural History Secretary on his return to India.

9th November. Ordinary Meeting.

A letter was read from Dr. Rājendralāla Mitra submitting a copy of his work entitled "Nepalese Buddhist Literature." It was resolved that Dr. R. Mitra should receive 30 author's copies, and that the work should be sold at Rs. 5 per copy. Dr. Mitra and Dr. Hoernle were requested to select from the gratuitous distribution list of the Bibliotheca Indica such Societies, Institutions and Individuals as might fittingly be presented with the work.

Parts I and II of Moore's "Lepidoptera of Ceylon" having been presented by the Home Department with the suggestion that the Society should apply for the remaining Parts directly to the Ceylon Government, it was resolved to make such application.

Mr. H. B. Medlicott reported that only 6 proofs of fresh matter of the Catalogue, each consisting of about a page, had been received from the Britannia Press during the months of August, September and October. Mr. Medlicott was requested to make such arrangements for the satisfactory completion of the Catalogue as he thought necessary.

The Secretary reported that he had heard that Mr. Lydekker was not returning to India and would therefore be unable to undertake the duties

of Natural History Secretary. It was resolved that Dr. Scully should be requested to act as Natural History Secretary during his stay in Calcutta.

30th November. Ordinary Meeting.

An exchange of the Proceedings and Part I of the Journal for the Bulletin of the Société d'Anthropologie de Lyon was sanctioned.

A letter from Dr. Garbe was read, from which it appeared that several eminent Orientalists did not receive the Notices of Sanskrit MSS. Dr. Hoernle and Dr. Mitra were requested to revise the list of Institutions and individuals who receive the "Notices of Sanskrit MSS." gratis, and it was resolved that the Government should be asked to distribute in future in accordance with this revised list.

A letter was read from Dr. J. Scully, consenting to act as Natural History Secretary during his stay in Calcutta.

A request of Major G. F. L. Marshall's, that the work entitled "The Butterflies of India" by himself and Mr. de Nicéville should be advertised on the cover of the Society's Proceedings, was acceded to.

Read a copy of a letter from the Secretary to Mr. P. C. Wheeler regarding his arrears of subscription to the Society. Also Mr. P. C. Wheeler's reply, declining to pay on the ground that he had not received the publications of the Society regularly and directing that his name should be removed from the list of members. On the Secretary's submitting a statement showing that the publications had been sent to Mr. Wheeler regularly until he had fallen considerably into arrears, it was resolved that the matter should be reported to the next general meeting, and that Mr. Wheeler's name should be suspended as a defaulter.

An application from K. F. Koehler of the Leipzig "Antiquarium" to be appointed agent for the sale of the Society's publications in Leipzig was refused on the ground that the Society's terms with Messrs. Trübner and Co. prevented their appointing another agent in Europe.

A letter was read from Mr. H. B. Medlicott stating that he had taken the work of printing the Catalogue from the Britannia Press, agreeing to pay them for what had already been printed; and that he was making arrangements with the Manager of the Caledonian Press to carry on the work.

A list of Societies, &c., to which Dr. Mitra and Dr. Hoernle recommended that copies of Dr. Mitra's "Nepalese Buddhist Literature" should be distributed, was approved.

It was resolved that the Government of India should be requested to give the Society information as to the nature and results of the dredging operations carried on during October, 1882.

Dr. A. F. R. Hoernle proposed that Rules 15 and 61 should be altered

so as to qualify Honorary and Associate Members for serving on the various Committees appointed by the Council. The proposal was approved, and the Secretary was requested to take the necessary measures to obtain the votes of the Society on the proposed change.

The Secretary reported that two Honorary Members, *viz.*, Mr. Chas. Darwin and Dr. J. Muir, had died during the year, and these deaths with a previous vacancy made three vacancies in the list of Honorary Members. The Natural History Committee was requested to make two nominations, and the Philological Committee one, to fill these vacancies.

28th December. Ordinary Meeting.

Parts III-V of Moore's Lepidoptera of Ceylon, presented by the Colonial Secretary, Colombo, were accepted with thanks.

A suggestion of Mr. H. Rivett-Carnac's that when finds of coins, &c., are recorded in the Society's Proceedings the name of the district and province should always be mentioned in addition to the name of the place where the coins &c. were found, was ordered to be circulated to the Secretaries for information.

On the recommendation of the Natural History Secretary, permission was granted to Lieut.-Col. H. H. Godwin-Austen to use again in his work on the "Indian Land and Fresh Water Mollusca" the plates of the animals of certain species and genera copied from Ferd. Stoliczka's drawings.

It was resolved that Mr. C. J. Rodgers should be proposed for election as an Associate Member.

A letter of explanation and apology from Mr. P. C. Wheeler was read and an order was passed that Mr. Wheeler should be informed that the Council accept his explanation, and, inferring from his letter that he is now willing to pay the full sum due, desist from any further proceeding in the matter until he has had an opportunity of paying: in the event of his doing so, that he will be allowed to retire from the Society in the usual way. It was ordered that an announcement to this effect should be made to the Society at its next meeting.

A vote of thanks was passed to the Tumlook Public Library Committee for the presentation to the Society of the greater part of the collection of coins belonging to that institution.

The consideration of a proposal made by the Secretary that lectures should be given in connection with the Society, as was done in the cold season of 1873-74, was deferred to the next meeting.

A Committee was appointed consisting of Messrs. H. B. Medlicott, J. Westland, A. W. Croft, H. F. Blanford, Major J. Waterhouse and Nawab Abdul Latif Khan Bahadur (with power to add to their number) to make preparations for the proper celebration of the Centenary of the Society during the next cold season.

On the recommendation of Mr. H. B. Medlicott, it was resolved that the Catalogue should be reprinted from the beginning by the Caledonian Press.

It was resolved to propose Messrs. W. T. Blanford, A. R. Wallace and Professor W. D. Whitney for election as Honorary Members at the next monthly meeting.

The list of proposed office-bearers and members of Council for the ensuing year was prepared.

The CHAIRMAN remarked that, as the evening was already somewhat advanced, and there was rather a long list of business before them on the paper, he would not detain the meeting with any detailed observations on the report which had been read. The salient features of the report might be summed up in a very few words: there had been no falling off in the work of the Society, but the number of their members was not increasing, and consequently their financial position was not altogether so satisfactory as could be wished. He hoped that all the members who heard him would take such opportunities as might offer of bringing recruits into their ranks. He would now ask the meeting to adopt the report, and, if they agreed to do so, he trusted that they would append to their acceptance of the report an expression of a vote of thanks to the Honorary Secretaries and Treasurer, to whom the Society was so deeply indebted for the good work they had done on its behalf.

The report was unanimously adopted, and a vote of thanks passed to the Honorary Secretaries and Treasurer for their services to the Society.

The PRESIDENT announced that the Scrutineers reported the result of the election of Officers and Council to be as follows :

President.

The Hon. H. J. Reynolds, B. A., C. S.

Vice-Presidents.

Dr. Rajendralála Mitra, C. I. E.

The Hon. J. Gibbs, C. S. I., C. I. E.

H F. Blanford, Esq., F. R. S.

Secretaries and Treasurer.

Dr. J. Scully.

Dr. A. F. R. Hoernle.

Dr. H. W. McCann.

J. Eliot, Esq., M. A.

Other Members of Council.

H. B. Medlicott, Esq., F. R. S.

D. Waldie, Esq., F. C. S.

J. Westland, Esq., C. S.
 Nawab Abdul Latif Khán Bahádur.
 Major J. Waterhouse, B. S. C.
 Alex. Pedler, Esq., F. C. S.
 A. W. Croft, Esq., M. A.

At the suggestion of the President, Messrs. J. Westland and R. Logan were appointed to audit the annual accounts.

The meeting was then resolved into the Ordinary Monthly General Meeting.

The Hon'ble H. J. REYNOLDS, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Royal Asiatic Society, Ceylon Branch,—Catalogue of the Library. Revised to 31st December, 1881.

2. From the Home Department,—Comparative Grammar of the Languages of Further India : a Fragment, and other Essays, by Captain C. J. F. S. Forbes ; (2) The Sarva-Darsana-Sangraha, by E. B. Cowell and A. E. Gough.

3. From the Panjab Government,—Reports on Sanskrit MSS. for July 1880 to June 1881 ; and for 1881-1882.

4. From the Authors,—History of Indigenous Education in the Panjab since annexation and in 1882, by G. W. Leitner ; (2) Footprints found at the Carson State Prison, by H. W. Harkness ; (3) Suggestions regarding Forest Administration in the Madras Presidency, by Dr. D. Brandis ; (4) The Coinages of the East India Company at Bombay, by E. Thomas.

5. From the Sanitary Commissioner with the Government of India,—Vital Statistics of India, Vol. VI.

6. From the Superintendent, Government Botanical Gardens, Sahárunpore and Mussoorie,—Report on the Progress and Condition of the Government Botanical Gardens at Sahárunpore and Mussoorie for the year ending 31st March, 1882.

7. From the Translator,—Kashgaria : (Eastern or Chinese Turkistan). Historical and Geographical sketch of the country ; its Military Strength, Industries and Trade. Translated from the Russian by Walter E. Gowan.

8. From the British Museum,—Catalogue of the Batrachia Gradientia s. Caudata and Batrachia Apoda in the collection of the British Museum. Second edition, by Geo. Albert Boulenger.

9. From the Secretary of State for India,—Sacred Books of the East, Vols. XIV and XVIII.

10. From the Government of Madras,—List of the Antiquarian Remains in the Presidency of Madras. Vol. I, by Robert Sewell.

11. From the Surveyor General of India,—Account of the operations of the Great Trigonometrical Survey of India. Vols. VII-VIII.

12. From the Officer in Charge, Tidal Operations, Survey of India, — Tide-Tables for the Indian Ports for the year 1883 (also January 1884) ; (2) Tide-Tables for the river Hooghly, Dublat (Saugor Island), Diamond Harbour, and Kidderpore (Calcutta), for the year 1883 (also for January 1884).

13. From Schlesische Botanische Tausch-Verein,—General-Doubletten-Verzeichnis des Schlesischen Botanischen Tausch-Vereins. XXI. Tauschjahr 1882-83.

14. From the Californian Academy of Sciences,—On certain remarkable Tracks, found in the Rocks of Carson Quarry, by Joseph LeConte.

15. From Debipershad of Jodhpur,—an Indo-Sassanian coin.

16. From the Deputy Commissioner of Bahraich,—four Varāha coins.

The SECRETARY reported that the Secretary to the Government of India, Home Department, had made over a set of Parliamentary Reports and Returns relating to India to be preserved in the Asiatic Society's Library, on the understanding that Government can call for any of them if required, or, if necessary, recover the whole at any time. A catalogue of these was laid on the table.

The following gentlemen, duly proposed by the Council at the last meeting, were ballotted for and elected Honorary Members of the Society :

W. T. Blanford, F. R. S.

A. R. Wallace, F. R. S.

Dr. William Dwight Whitney.

The following gentleman, duly proposed by the Council at the last meeting, was ballotted for and elected an Associate Member :

C. J. Rodgers, Esq.

The following gentleman, duly proposed and seconded at the last meeting, was elected an ordinary Member :

L. J. K. Brace, Esq.

The following gentleman is a candidate for ballot at the next meeting :

Babu Jadava Chandra Goswami, B. A., proposed by Babu Adharlal Sen, seconded by Nawab Abdul Latif, Khan Bahadur.

The SECRETARY reported that the following gentlemen had withdrawn from the Society :

R. Lydekker, Esq.

R. Griffith, Esq.

R. Turnbull, Esq.

The PRESIDENT announced that, in accordance with the notice given at the December meeting, the votes would now be taken on the proposed amendments to Rules 15 and 61.

Dr. H. Cayley and Mr. G. A. Grierson were appointed Scrutineers and reported that the votes were unanimously in favour of the amendments.

The PRESIDENT announced that the amendments were carried.

The SECRETARY reported that Dr. D. Brandis had compounded for all future subscriptions by paying a commutation fee of Rs. 120.

The COUNCIL reported that, in consequence of the general wish expressed in the discussion which took place after the reading of Mr. Bayne's paper at the last meeting, the Secretary had written a letter to the Government of Bengal requesting the Lieutenant-Governor to order further excavations to be made with a view to fixing the remaining sites in old Fort William definitely, and to direct tablets to be erected at the more important points. A reply had been received from the Assistant Secretary to the Government of Bengal, P. W. D., enclosing a copy of a letter from the Secretary to the Government of Bengal, P. W. D., to the Superintendent of Works, Calcutta, ordering the excavations to be made and tablets to be erected at a cost not to exceed Rs. 300.

The SECRETARY read the following note by Mr. R. R. Bayne on some further discoveries made by him on the site of old Fort William during the laying down of the water-pipe through the Custom House premises :—

Since the last meeting of the Society, the laying of the water pipe through the Custom House premises has been carried out. I fortunately returned to Calcutta only the day before they began the excavation about the site marked on my plan shewing the earth-work Ravelin alluded to by Orme. The Tram-lines cross this spot and the excavation of a piece about 40 feet in length was made at night. I made it my duty to watch it and only left on completion of the excavation after two o'clock at night or rather morning. I was more than rewarded, for here undoubtedly was the excavation alluded to by Orme most distinctly shewn in full section of the ditch, 30 feet wide, with sloping sides of 20 feet on the Fort side and 10 feet on the side towards the country beyond. A plan of the position of the section I have partly prepared whilst my notes are fresh: this I will complete ultimately. The trench in which the water pipe was laid only went down 6 feet below road level: I was, however, kindly lent some coolies by the pipe layer and, at the lowest place indicated by the sloping lines of the ditch side, I had a further excavation made 2'9" deep and to the bottom of the ditch. I inferred it was bottom because brick debris were wanting and it was all clay: this 2'9" also brought me into water.

The longitudinal section of this pipe excavation shewed on its sides the undisturbed natural soil sloping either way: above this it was filled in with a mixture of loose bricks, mortar, broken plaster and earth. It all lay very loosely packed towards the bottom: the bricks, as they lay tumbled in, were full of cavities, between some of which I could see in several inches or probe a stick as much as a foot: towards the bottom there was a greater mixture of loose earth than towards the top: the bottom to which I excavated and at which the filling of bricks ceased was at water line or 8'9" below road level.

The excavation here, and the appearance of the trench, gave me the impression that the looseness of the filling might be due to some such cause as the decay of bodies laid in first, causing a cavity, which, if of a few inches only, would allow the soil immediately above it to follow in and consequently lie loosely packed. There was not a vestige of a bone, but 125 years would, I presume, destroy all traces of even bones in a soil saturated with water. The bottom of the trench, the part in which bodies would lie, was excavated by me with the light only of oil torches and I of course could only very indifferently examine the soil, added to which the water pipe layers could give me no time.

The trench was at an angle, and to any one standing behind it, at the point at which the excavation cut it, the salient would be to his right, shewing that the centre of the gateway was south,—how far I cannot venture a guess,—of the small fountain erected at this place. The ditch was to the east of this fountain, the bottom of the slopes 43 feet to the east of its centre.

I am inclined to think that the position of the fountain is, north or south, not very far off the centre line of the gateway.

About 56 feet within this temporary Ravelin of earthwork, I found a sloping wall of brickwork, 2'6" thick, following the same direction, and 27'6" east, or in advance of, the east curtain or gate: from this I infer that there was an outer wall covering the entrance to the Fort.

The excavation of this trench for the piping has been completed and has settled that the face of the eastern gate is still further to the south. Inside it I find at a distance of 17 feet the inner wall already found behind the northern curtain and the northern end of the east curtain: beyond it, again, I find at 11 feet a verandah wall as already described by me and wanting in all but the small gateway at the N. W. corner.

At a distance of 175'0" within this, I found some of the foundations of the Governor's House: in my map I have conjectured this and placed it 160 feet within the gateway, so that I am not very far out of position; to the north I have not examined the walls nor do I intend to do so as this is not important enough to search for, but should be recorded when further excavations are made.

Going west, the west curtain has been passed and 18 feet within it the inner wall of the chambers, a shallow wall but *no* verandah again. So that I can now safely say that the verandahs did not go entirely round the fort interior.

Beyond this, I cannot reconcile anything with my find to the north. There are no less than five walls all of a date subsequent to the old wall just alluded to, all parallel to it, that is, all running north and south at about the same angle.

These walls are all very well built, some with not very deep foundations, all with a brick 10×5 (full dimensions) by 2 inches thick: the last is 140 feet west of the west curtain.

Within this last wall is another wall 1' 8" thick and the wall immediately east of this is also 1' 8" thick (the only walls less than three feet thick): they are 16 feet apart and I think have formed a landing place of narrow steps round a central "well" of 9' 6" square.

Nearly all this 140 feet is "filling," that is, made-up ground: the last 96 feet is all filling and to a depth below the 6 feet bottom of the trench.

As these walls take one *outside* the Fort, I have not examined them further. The whole of the upper surface is road-metal on brick on edge on brick flat over rubbish: this extends down about 18 inches and the very perfect old brick on edge on brick flat, found to the north and laid at right angles to the curtain wall, is here wanting: all I have just alluded to is quite modern.

I have postponed any further search here until my return in April to Calcutta. The operations of the Municipality in laying in this pipe have been most opportune and have helped me considerably. I have to thank the overseer in charge for his assistance.

DR. M'CANN remarked that as these further excavations had shown that the gateway of the fort was further to the south than Mr. Bayne had originally inferred, the south curtain wall might also be further to the south, so that Dr. Chevers's inference that the arches in the Post Office compound had lain just inside this wall might after all be correct.* He further stated that Mr. Bayne had pointed out to him that the long slope of the ditch as exposed by him was towards the fort, whilst the short slope was outwards, which was contrary to the usual mode of constructing ditches to cover fortifications.

* Mr. Bayne subsequently remarked as follows on this suggestion. "I do not think this at all likely, as my centre line of the east entrance of the Fort was conjecture and was only a few feet to the north of its position as now ascertained, and if the arcade was inside the Fort as supposed by Dr. Chevers, then the east and west sides of the fort would be over 50 feet longer than stated by Orme, whereas Orme's dimensions bring the south curtain wall close to these arcades and we are told of the existence of flat-roofed warehouses abutting on the curtain wall.

The COMMANDER-IN-CHIEF said that it was not surprising that the profile of the ditch of the work covering the gateway of the Fort is found not to be in accordance with the accepted views of Military Engineering Science, as the canons of the art at the present day are, in respect of such work, almost the opposite of those obtaining at the end of the last century and especially in native forts.

Dr. HOERNLE read the following letter from Mr. E. V. Westmacott, forwarding a rubbing of a Kutila inscription from Monghyr :—

I enclose a rubbing of a *Kutila* inscription of Mahi Pál Deb, which is, I think, sufficiently interesting to be laid before the Asiatic Society at its next meeting. It is cut on the left hand portion of a broken basalt slab, which evidently formed the trabeate lintel of a doorway. The surface is not sufficiently polished to enable me to take a very clear rubbing, but the characters are very clear (vide Plate II). I read them *Srī Mahi Pála Deva rājye samvat 1*, and then comes a curve which is apparently part of a second figure, the rest of the slab being broken off. The second rubbing is from a slab of the red clay slate, which is the material from which most of the old buildings of Monghyr are formed, and appears to be a mere mason's mark of three letters and a figure. Neither end of the inscription is broken off, and it appears to be perfect. These inscriptions have been discovered by Mr. Ambler, in pulling down a ruinous Muhammadan mosque which stood on his premises, occupying the north-western angle of the old fort of Monghyr. The stones on which they are cut had been built into the walls of the mosque, with numerous others carved with scrolls, fleur de lys, and chain ornaments, some in basalt, some in clay-slate, and all having formed part of a highly decorated Buddhist *stúpa*, or, probably, as I judge from the diversity of material and pattern, of more *stúpas* than one. From the size, I should think that they were small *stúpas*, from six to ten feet high, such as are found, built, I presume, as votive offerings, close to some great central *stúpa*.

These stones discovered by Mr. Ambler form only a small portion of the remains of Buddhist buildings which exist in Monghyr and the neighbourhood. I observe carved lintels, mouldings, and ornamental bas-reliefs built into the walls and gateways of the fort, the drains, and most of the earlier buildings. Some friezes with figures are preserved in the local museum, a similar row of figures being among Mr. Ambler's stones, and I am informed that carved stones are numerous on private premises in the neighbourhood.

The celebrated Monghyr copper plate of Deb Pál Deb, described in the first volume of the Asiatic Researches, and referred to by me in a paper on the Pál Rájas published in the Calcutta Review eight or nine

years ago, clearly mentions Mudga-giri as the place from which Deb Pál issued his grant. I am unfortunately writing without books to refer to, and am trusting to my memory, but the expression which has been translated 'victorious camp' is in my opinion used by the Pál Rájás, and also by the Sens, to denote their royal residence. Its application by the Sen Rájás to Bikrampore, certainly in one copper-plate, and, I think, in more, appears to prove this, Bikrampore being well known as the capital of the Sens. It is interesting to find an inscription of Mahi Pál, two or three generations later than Deb Pál, on the spot which was Deb Pál's residence. Looking to the natural position of Monghyr, on a rock washed by the Ganges, it is reasonable to suppose that it would be maintained as a stronghold by the rulers of the land, whoever they were, and at the time of the Muhammadan conquest it was probably held as an important position by the dynasty, whatever it was, which the Muhammadans displaced. I have met with very few early Muhammadan buildings the materials of which do not show clearly that they had belonged to buildings earlier still, and also that those earlier buildings were of a Buddhist origin. Buddhism had probably ceased to exist before the advent of the Muhammadans, but the religious buildings of the Buddhists do not seem to have been destroyed. I think that the worshippers of Siva, or of the Brahmanical Pantheon, adapted them to their own rites, as may be seen at Buddha-Gaya at the present day. The shape and size of the old bricks found about Monghyr are the same as those of the bricks in Southern Dinajpur and Bogra where Buddhist remains are numerous, being no longer than they are broad, eight or nine inches square, and two or three inches thick.

The following note by Dr. R. L. MITRA was read on the subject :—

"Mr. Westmacott's letter is interesting, and should be read at the next meeting. The date of the inscription being incomplete, it cannot be used for any historical purposes. The figure visible appears to me more like 9 than 1. The curled end of the second figure would indicate a 3, and there was probably a third. The second inscription is too smudgy to be of much use. I think Mr. Westmacott is right in taking it for a mason's mark.

I have not the original of the old inscriptions to refer to. The words translated 'from the victorious camp' are generally विजय कटकान् and as 'kaṭaka' means both a 'camp' and a 'capital', either rendering would be verbally correct. In some cases, however, the word *Skandhāvāra* is used, and there 'camp' is the only rendering admissible."

Mr. GRIERSON pointed out that, according to tradition, there had once been a famous king, called Mahí Pál Deb, in Rangpur. The chief town of that district, Mahiganj, was said to be called after him. With reference to the Rangpur Pál dynasty, he referred the meeting to his Introduction to the "Song of Manik Chandra," published in the Journal of the

Society, Part I, No. 3, 1878, and to Mr. Westmacott's article on the Pál kings in Vol. LIX of the Calcutta Review.

The following papers were read—

1. *Some further results of sun-thermometer observations with reference to atmospheric absorption and the supposed variation of the solar heat. (Postponed from last Meeting.)—By H. F. BLANFORD, F. R. S., Meteorological Reporter to the Government of India.*

This paper is published in the Journal, Part II, 1882.

Mr. J. BRIDGES LEE said he proposed to offer only a few observations on that portion of Mr. Blanford's paper in which he referred to the difficulty of distinguishing between atmospheric effects due to aqueous vapour, mist or diffused cloud and dust haze. All these forms of matter are powerful heat absorbers. All interfere more or less seriously with the value of any thermometric observations of the heat of the sun's rays and, having regard to the smallness of the periodic variations which are believed to occur with some regularity over cyclical periods between maxima and minima of sunspots, it is evident that the errors introduced by the irregular and uncertain causes referred to may be sufficient to vitiate, if not altogether to destroy, the value of all observations made at low altitudes, so far as they have any bearing upon the question of the variation of radiant energy of the sun's rays. Mr. Lee suggested, however, that it may be quite possible to separate and to distinguish between the effects due to the before-mentioned causes. Aqueous vapour diffused through the atmosphere absorbs from the sun's rays both heat and light, but the absorption is selective and a spectroscope shows certain well known and distinctly marked dark bands towards the least refrangible end of the spectrum. Aqueous vapour, except possibly to a very small extent in the uppermost layers of the atmosphere, does not reflect or diffuse heat or light. Aqueous mist or diffused cloud, on the other hand, consists of myriads of tiny globules of water. These globules diffuse light by reflection and the light reflected is polarised at right angles to the incident solar rays. That polarised light can be observed and roughly measured by any suitably constructed polariscope. Professor Tyndall was, Mr. Lee believed, the first physicist who studied in any detail the characters of mist and fine cloud precipitated upon a beam of (electric) light. Speaking from memory, only, Mr. Lee was unable to give a reference to the paper in which his results were described, but he had had the advantage of attending the reading of his paper and following the experiments then performed. He experimented with the vapours of certain ethers and Hydrochloric Acid or Chlorine enclosed in long glass cylinders with flat ends and concentrated upon the mixture a conical beam of electric light. The result was that a very fine dark blue mist was quickly deposited upon the beam. The mist then passed through

all shades of pale blue to white (as seen by reflected light) and the light reflected was polarised as above stated.

Naturally aqueous mist in the atmosphere is always accompanied by aqueous vapour, but while the latter betrays its existence by selective absorption, the former is detected by its diffusive and polarizing effects.

Dust haze is more difficult to distinguish from aqueous mist, but it may be noticed, as Mr. Blanford had remarked, that dust haze is most plentiful in the atmosphere when aqueous vapour mist and cloud are least plentiful. The effects of each may be capable of differentiation with the aid of a spectroscope and absorbing media. Dust haze is composed of minute solid particles which reflect slightly and absorb strongly. The absorption by dust haze is diffuse, being greatest at the most refrangible end of the spectrum, but it extends with gradually diminishing intensity through the green, yellow, orange and red. The absorption by clean aqueous mist or cloud is quite different.

A clean white cloud flits between the earth and the sun, and it is found possible to turn one's eyes without pain toward the sun's rays. The intensity of the rays which reach us is greatly diminished, but the sun still looks white or nearly so through the cloud and the spectrum will differ in little but intensity from the ordinary spectrum obtained on looking directly at the sun before or after the cloud has passed. In looking at the sun through a dust cloud (or a London or Calcutta fog, which consists of watery globules with particles of solid dust or dirt attached), the sun appears to pass from white through all the shades of yellow, orange and red until its direct rays are at last completely quenched. The effect of a clean cloud of water particles may be roughly compared to the effect of a sheet of nearly colourless ground glass, the effect of dust or dirty fog to a similar sheet of smoked glass. Further thought and a close and careful attention to experimental detail will probably be necessary before practical effect can be given to the suggestion here thrown out, but Mr. Lee's object in making these remarks was to indicate the possibility of increasing the value of certain classes of meteorological observations by calling in the aid of the spectroscope and polariscope as meteorological instruments. In all Mr. Lee's expeditions to the Alps and Himalayas, he has invariably carried a small Nicol's prism, and has frequently found that with its aid he has been able clearly to discern distant objects which were otherwise rendered indistinct or invisible by the polarised light from intervening mist. Professor Tyndal in one of his books or papers refers to having employed a Nicol's prism for the same purpose.

MR. BLANFORD, in replying to Mr. Bridges Lee's remarks, said he thought that gentleman had misunderstood the nature of the difficulty he had briefly alluded to in distinguishing between the effects of dust haze and high diffused cloud. The remark had reference only to the actinometric

observations made at Alipore, and to the fact that the paleness of the sky, which varied to some extent with the actinic intensity shown by the instrument, might be due either to dust haze or to diffused cloud or more probably to both, and that it was impossible to separate the effects of these two agents. He had frequently examined the spectrum afforded by the setting sun shining through the dense haze that shrouds the plains in the dry weather, as seen from Simla with the aid of a small pocket spectroscope. There was a general absorption especially in the blue and violet, and, as might be expected, the low sun bands due to water vapour were also very strong.

MR. DE NICEVILLE stated, with reference to Mr. Blanford's remarks on the absorption of the heat of the sun by the 'dust haze' which prevails during the dry months of the year in the plains of India, and Mr. Blanford's statement that he proposed to carry out a series of observations extending over two years at Leh, Ladak, where the sky is almost always clear of cloud, that when he was in Leh in June, 1877, the dust in the valley was particularly noticeable, so that objects at a few miles distance were quite obscured by it. It would appear therefore that, though the difficulty of the absorption of heat by vapour would not be encountered at Leh, there would still be the perhaps greater difficulty of the haze to contend against in any observations carried on at that place.

In the discussion that took place, it appeared that, whilst this dust haze in the valleys about Leh was particularly remarkable, an ascent of a few hundred feet carried one quite clear of it.

2. *A new Species of Cyrestis* (Lepidoptera Rhopalocera) from Great Nicobar.—By LIONEL DE NICEVILLE.

The beautiful insect described in this paper, to which Mr. de Nicéville has given the name of *Cyrestis tabula*, was recently received by the Indian Museum from Mr. F. A. de Roepstorff, who obtained it at the close of last year from the island of Great Nicobar. It is the first species of the genus *Cyrestis* that has been recorded from the Nicobar group of islands, though three species have been obtained by Mr. de Roepstorff from the neighbourhood of Port Blair in the South Andaman group.

This paper will be published in the Journal, Pt. II, 1883.

3. *Notes on lately discovered sepulchral mounds, cairns, caves, cave-paintings, and stone implements*—By A. C. CARLLEYLE, First Assistant, Archaeological Survey of India.

In this paper Mr. Carlleyle enumerates all discoveries of interest lately made by him in the district of Mirzapur and then gives a general account of his discoveries in Baghelkhand, Bundelkhand and other places during the last nine years.

This paper will be published in the Journal, Pt. I, 1883.

LIBRARY.

The following additions have been made to the Library since the Meeting held in January last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

- Baltimore. Johns Hopkins University,—American Chemical Journal, Vol. IV, No. 4, October, 1882.
- . American Journal of Philology,—Vol. III, No. 2.
- . Circulars,—Vol. II, No. 19, November, 1882.
- . Seventh Annual Report, 1882.
- Bombay. The Indian Antiquary,—Vol. XI, Part 139, December, 1882; and Vol. XII, Part 140, January, 1883.
- Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 19-20, December, 1882; and No. 1, January, 1883.
- Calcutta. Geological Survey of India,—Memoirs (Palæontologia Indica), Ser. XIV, Vol. I, Part 2.
- . The Indian Evangelical Review,—Vol. IX, Nos. 33-35, July to October, 1882; and January, 1883.
- Cambridge (Mass.). American Philological Association,—Transactions, Vol. XIII, 1882.
- Ithaca. The Library of Cornell University,—Vol. I, Nos. 1-3.
- Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. II, No. 52; Vol. III, Nos. 1-5.
- London. Academy,—Nos. 553-553.
- . Anthropological Institute,—Journal, Vol. XII, No. 2, November, 1882.
- . Athenæum,—Nos. 2876-2881.
- . Geological Society,—Quarterly Journal, Vol. XXXVIII, Part 4,
- . ————,—List of Members, November 1st, 1882.
- . Nature,—Vol. XXVII, Nos. 684-689.
- . Royal Asiatic Society,—Journal, Vol. XIV, Part 4.
- . Royal Astronomical Society,—Monthly Notices, Vol. XLII, No. 9 (Supplementary number).
- . Society of Telegraph Engineers,—Journal, Vol. XI, No. 44, December, 1882.
- Munich. Repertorium für Experimental-Physik,—Vol. XVIII, No. 12.
- New York. American Oriental Society,—Proceedings, October, 1882.

- Paris. Société de Géographie,—Compte Rendu des Séances, No. 20, 1882.
 Pisa. Società Toscana di Scienze Naturali,—Atti, Processi Verbali, Vol. III, 12th March and 7th May, 1882.
 Rome. Società degli Spettroscopisti Italiani,—Memorie, Vol. XI, No. 10, October, 1882.
 Simla. United Service Institution of India,—Journal, Vol. XI, No. 53, 1882.
 St. Petersburg. Russian Geographical Society,—Proceedings, No. 3, 1882.
 Yokohama. Asiatic Society of Japan,—Transactions, Vol. X, Part 2.

BOOKS AND PAMPHLETS,

presented by the Authors, Translators, &c.

- BRANDIS, DR. D. Suggestions regarding Forest Administration in the Madras Presidency. Fcp. Madras, 1883.
 HARKNESS, H. W. Footprints found at the Carson State Prison. 8vo. San Francisco, 1882. Pam.
 KUROPATKIN, A. N. Kashgaria : (Eastern or Chinese Turkistan.) Historical and Geographical Sketch of the country ; its military strength, industries and trade. Translated from the Russian by Walter E. Gowan. 8vo. Calcutta, 1882.
 LEITNER, G. W. History of Indigenous Education in the Panjab since annexation and in 1882. Fcp. Calcutta, 1882.
 THOMAS, EDW. The Coinages of the East India Company, at Bombay, under the Charters of Charles II, with a note on the Indian Exchanges of the Period. 12mo. Bombay, Pam.

MISCELLANEOUS PRESENTATIONS.

- Report on the Administration of Bengal, 1881-82. 8vo. Calcutta, 1882.
 Report on the External Trade of Bengal with Nepal, Sikkim, and Bhutan, for the year 1881-82. Fcp. Calcutta, 1882.
 Report on the Internal Trade of Bengal for the year 1881-82. Fcp. Calcutta, 1882.

BENGAL GOVERNMENT.

- BOULENGER, GEORGE ALBERT. Catalogue of the Batrachia Gradientia s. Caudata and Batrachia Apoda in the Collection of the British Museum. Second edition. 8vo. London, 1882.

BRITISH MUSEUM.

- LE CONTE, JOSEPH. On certain remarkable Tracks, found in the Rocks of Carson Quarry. 8vo. San Francisco, 1882.

CALIFORNIAN ACADEMY OF SCIENCES.

Royal Asiatic Society, Ceylon Branch. Catalogue of the Library. Revised to 31st December, 1881. 8vo. Colombo, 1882.

CEYLON BRANCH, ROYAL ASIATIC SOCIETY.

Report on the Trade and Resources of the Central Provinces for the year 1881-82. Fcp. Nagpur, 1882.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Report on the Administration of the N. W. P. and Oudh, for the year ending 31st March, 1882. 8vo. Allahabad, 1883.

GOVERNMENT, N. W. PROVINCES.

FORBES, CAPTAIN C. J. F. S. Comparative Grammar of the Languages of Further India: a Fragment, and other Essays. 8vo. London, 1881.

COWELL, E. B. AND GOUGH, A. E. The Sarva-Darśana Saṅgraha. 8vo. London, 1882.

The Indian Antiquary, Vol. XI, Part 139, December, 1882; and Vol. XII, Part 140, January, 1883.

HOME DEPARTMENT.

Annual Report of the Madras Medical College, Session 1881-82. Fcp. Madras, 1882.

SEWELL, ROBERT. Archæological Survey of Southern India. Lists of the Antiquarian Remains in the Presidency of Madras. Vol. I. 4to. Madras, 1882.

MADRAS GOVERNMENT.

Tide-Tables for the river Hooghly, Dublat (Saugor Island), Diamond Harbour, and Kidderpore (Calcutta), for the year 1883 (also January, 1884). 16mo London.

Tide-Tables for the Indian Ports for the year 1883 (also January 1884). 16mo. London.

OFFICER IN CHARGE, TIDAL OPERATIONS, SURVEY OF INDIA.

Reports on Sanskrit MSS. for July 1880 to June 1881; and for 1881-82.

PANJAB GOVERNMENT.

Vital Statistics of India; Vol. VI. Sickness and Mortality in the European Army of the Bengal Presidency from 1870 to 1879; and an aggregate of the Statistics of the ten-year period. Fcp. Simla, 1882.

SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA.

General-Doubletten-Verzeichnis des Schlesischen Botanischen Tausch-Vereins. XXI. Tauschjahr 1882-83. Fcp. Rybnik.

SCHLESISCHE BOTANISCHE VEREIN, BRESLAU.

BUEHLER, GEORG. The Sacred Laws of the Âryas as taught in the schools of Âpastamba, Gautama, Vâsishtha, and Bandhâyana. Translated. Part II. (Vol. XIV of F. Max Müller's "Sacred Books of the East.") 8vo. Oxford, 1882.

WEST, E. W. Pahlavi Texts. Translated. Part II. (Vol. XVIII of F. Max Müller's "Sacred Books of the East.") 8vo. Oxford, 1882.

SECRETARY OF STATE FOR INDIA.

Report on the Progress and Condition of the Government Botanical Gardens at Sahárunpore and Mussoorie for the year ending 31st March, 1882. Fcp. Allahabad, 1882.

SUPT., GOVT. BOTAN. GARDENS, SAHARUNPORE & MUSSOORIE.

Account of the Operations of the Great Trigonometrical Survey of India. Vols. VII-VIII. 4to. Dehra Dun, 1882.

SURVEYOR GENERAL OF INDIA.

PERIODICALS PURCHASED.

Berlin. Deutsche Litteraturzeitung,—Nos. 44-47, 1882.

Calcutta. Calcutta Review,—Vol. LXXVI, No. 157, January, 1883.

———. Indian Medical Gazette,—Vol. XVIII, No. 1, January, 1883.

Geneva. Archives des Sciences Physiques et Naturelles,—Vol. VIII, No. 12.

Göttingen. Gelehrte Anzeigen,—Nos. 51-52, December, 1882; and Nos. 1-2, January, 1883.

———. Nachrichten,—No. 22.

Leipzig. Annalen der Physik und Chemie,—Vol. XVII, No. 13, Vol. XVIII, No. 1.

———. Beiblätter,—Vol. VI, No. 11.

———. Hesperos,—Vol. II, Nos. 36-37.

———. Litterarisches Centralblatt,—Nos. 45-48.

London. Annals and Magazine of Natural History,—Vol. X, No. 60; and Vol. XI, No. 61.

———. Chemical News,—Vol. XLVI, Nos. 1202-1205; and Vol. XLVII, Nos. 1206-1207.

———. Entomologist,—Vol. XV, No. 235.

———. Entomologist's Monthly Magazine,—Vol. XIX, No. 223.

———. London, Edinburgh and Dublin Philosophical Magazine,—Vol. XIV, No. 90, December, 1882; and Vol. XV, No. 91, January, 1883.

———. Messenger of Mathematics,—Vol. XII, Nos. 6-7, October and November, 1882.

———. Nineteenth Century,—Vol. XII, No. 70, December, 1882.

———. Numismatic Chronicle,—Vol. II, (3rd Series), Part 3, No. 7.

———. Publishers' Circular,—Vol. XLV, Nos. 1085-1087.

———. Society of Arts,—Journal, Vol. XXXI, Nos. 1568-1573.

New Haven. American Journal of Science,—Vol. XXIV, No. 143, November, 1882.

- Paris. Annales de Chimie et de Physique,—Vol. XXVII, November, 1882.
——. Comptes Rendus,—Vol. XCV, Nos. 22-26; and Vol. XCVI, No. 1.
——. Journal des Savants,—October and November, 1882.
——. Revue Critique,—Vol. XIV, Nos. 49-52; and Vol. XV, Nos. 1-2.
——. Revue des deux Mondes,—Vol. LIV, Nos. 3-4; and Vol. LV, No. 1.
——. Revue Scientifique,—Vol. XXX, Nos. 24-27; and Vol. XXXI, No. 1.
Philadelphia. Tryon's Manual of Conchology,—Part 16.
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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR MARCH, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th March, at 9 P. M.

Hon'ble H. J. REYNOLDS, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

From the Authors,—(1) The Minerals of New South Wales, by Archibald Liversidge ; (2) Parthian and Indo-Sassanian Coins, by Edward Thomas.

From the Royal Society of New South Wales,—(1) New South Wales in 1881, by Thomas Richards ; (2) Annual Report of the Department of Mines, New South Wales, for the year 1880.

From the Curator of Ancient Monuments in India,—First Report of the Curator of Ancient Monuments in India for the year 1881-82.

From the Committee, Norwegian North-Atlantic Expedition,—Norwegian North-Atlantic Expedition, 1876-78. VIII:—Zoology.—Mollusca. 1. Buccinidæ, by Herman Friele ; IX:—Chemistry. 1. On the Solid Matter in Sea-water ; 2. On Oceanic Deposits, by Ludvig Schmelck.

From the Home Department,—Archæological Survey Reports, Vol. XV.

The following gentleman, duly proposed and seconded at the last meeting, was ballotted for and elected an Ordinary Member :

Babu Jadava Chandra Goswami, B. A.

The following gentleman is a candidate for election at the next meeting :

The Hon. C. H. T. Crosthwaite, C. S., proposed by the Hon. H. J. Reynolds, seconded by Major J. Waterhouse.

The SECRETARY reported that Dr. J. Scully had tendered his resignation as Natural History Secretary.

The SECRETARY read the names of the following gentlemen appointed by the Council to serve on the several Committees during the ensuing year :

Finance Committee.

Dr. Rájendralála Mitra.
H. B. Medlicott, Esq.
J. Westland, Esq.
Alex. Pedler, Esq.
R. Logan, Esq.
J. C. Douglas, Esq.

Library Committee.

Dr. Rájendralála Mitra.
H. F. Blanford, Esq.
H. B. Medlicott, Esq.
Dr. D. Waldie.
Major J. Waterhouse.
A. W. Croft, Esq.
Dr. Mohendralal Sircar.
Dr. D. D. Cunningham.
Col. J. F. Tennant.
Babu Prannath Pandit.
Babu Pratapa Ch. Ghosha.

Philological Committee.

Dr. Rájendralála Mitra.
Nawab Abdul Latif Khan Bahadur.
Rev. K. M. Banerjea.
J. Beames, Esq.
F. S. Growse, Esq.
Dr. G. Thibaut.
C. J. Lyall, Esq.
G. A. Grierson, Esq.
Hon'ble J. O'Kinealy.
Hon'ble Sayad Ahmad Khan, C. S. I.

Natural History Committee.

H. B. Medlicott, Esq.
Dr. G. King.
A. O. Hume, Esq.
S. E. Peal, Esq.

Dr. D. D. Cunningham.
Major G. F. L. Marshall.
Dr. J. Anderson.
R. D. Oldham, Esq.
Dr. J. Scully.
L. de Nicéville, Esq.

Physical Science Committee.

H. F. Blanford, Esq.
H. B. Medlicott, Esq.
Dr. D. Waldie.
Major J. Waterhouse.
Alex. Pedler, Esq.
A. J. L. Cappel, Esq.
Col. J. F. Tennant.
Lieut.-General J. T. Walker.
F. Fedden, Esq.
Rev. Fr. E. Lafont.
Dr. Mohendralal Sircar.

Coins Committee.

Dr. Rájendralála Mitra.
Hon'ble J. Gibbs.
Maj.-Genl. A. Cunningham.
Col. J. F. Tennant.
H. Rivett-Carnac, Esq.
Major W. F. Prideaux.

History and Archæology Committee.

Dr. Rájendralála Mitra.
Hon'ble J. Gibbs.
Major-General A. Cunningham.
Dr. J. Anderson.
R. R. Bayne, Esq.
J. Beames, Esq.
Babu Pratapa Ch. Ghosha.
F. S. Growse, Esq.
Babu Prannath Pandit.
H. Rivett-Carnac, Esq.
Captain R. C. Temple.

The SECRETARY read the following letter from Mr. A. Simson descriptive of a severe hailstorm at Shamnagar on the 5th March :—

It will doubtless interest the Society to learn that yesterday evening at about 8 o'clock there was a hailstorm of an unusual character at Sham-

nagar, on the Eastern Bengal Line. The storm was apparently from the south-west and lasted only a few minutes, leaving the ground fairly evenly strewn with hailstones, on an average about 4 to 5 inches apart. It is the size of the hailstones, however, that forms the remarkable feature in the occurrence. They were mostly of about the bulk of pigeons', and small Indian hens', eggs, but generally flattened in shape, though some were much larger. The largest one, out of some 40 or 50 which were collected at random, measured, about 20 minutes after the fall and when it had melted considerably from handling, $3\frac{1}{2}$ inches in length and over 2 inches lateral diameter.

This stone and all the larger ones consisted of a distinct, radiated, opaque nucleus, translucent in its centre, a spheroidal disc in shape and about $1\frac{1}{4}$ inches in its largest diameter, surrounded by clear prismatic ice, with the edges more or less melted. One hailstone was brought to me immediately after it fell, about $2\frac{1}{2}$ inches in diameter, almost spherical, with all the massive surrounding crystals edged and pointed. It had the appearance of the spiked ball at the end of the flail wielded in ancient warfare. The smaller stones consisted of the nucleus only, and the larger sizes depended upon a greater or less bulk of crystalline ice adhering to it.

I regret there was no opportunity to weigh the hailstones, but they were of a very hard, massive character.

MR. BLANFORD said that the hailstones described by Mr. Simson were undoubtedly of large size but by no means unprecedented. He had himself on two occasions described and figured in the Society's Journal hailstones of equal or nearly equal dimensions, and much larger stones had been described by others. The form and structure of the stones described in the letter were such as he had observed himself on several occasions. In general, large stones had an opaque nucleus, consisting of snow crystals with included air; and the outer part of large stones observed by him almost always consisted of transparent ice, frequently enclosing air bubbles; and also, frequently, with numerous projections which bore much resemblance to half melted crystals. He had, however, never actually identified the well known hexagonal prismatic form (which is that in which water crystallizes) in these pseudo-crystals. In many cases, although not always, the portion immediately surrounding the nucleus consisted of concentric shells of opaque and transparent ice alternately. The formation of hailstones of such large size could not yet be said to be satisfactorily explained. The theory of Professor W. Ferrel appeared the most probable of those hitherto put forward. It supposed that hailstones were caught up in rotating convection currents of great violence, similar to those in a water-spout, and were thus kept suspended in the atmosphere long enough to allow of their receiving repeated accretions of condensed vapour, sufficient in the

end to raise them to the large size frequently observed. This hypothesis, however, awaited verification.

In reply to a question, Mr. Blanford said that the structure he had described might be considered as generally characteristic of large hailstones, but he had also sometimes observed irregular lumps of ice, some of which were easy to identify as fractured hailstones, since they included portions of a fractured nucleus.

DR. RĀJENDRALĀLA MITRA gave a reading of a Sanskrit inscription on a stone slab found by Mr. F. C. Black among the ruins of the old fort of Deogarh in the south of the Lalitpur district, N.-W. Provinces, and presented by him to the Society. This slab was found in a jungle which had overgrown the ruins of the ancient fort of Deogarh and, when discovered, was standing loosely, propped up against two small columns in the eastern portion of the fort. The slab measures 6'2" × 2'9" with an average thickness of 4". The inscription covers the face of the slab and extends to 34 lines: and the characters are of the old Deva Nagari type, each about an inch long. The date of the inscription corresponds to A. D. 1424, and the subject of it is the dedication of 2 images by a Jain priest of the name of Holi. As all the persons named in the record were either Jain ascetics or private householders, it is of no historical value.

The inscription and translation, and Dr. Mitra's note thereon, will be published in full in the Journal, Part I, 1883.

Dr. A. F. R. HOERNLE announced that Mr. Ch. J. Rodgers had sent for exhibition 8 of the "niṣār" coins referred to in his paper in the January Proceedings. As they are very rare and curious, drawings of them would be published in the Proceedings (vide Plate V).

Dr. A. F. R. HOERNLE exhibited some rupees of Shamsuddīn Ilyās Sháh and Sikandar Sháh bin Ilyās, of Bengal, received from Mr. R. H. Wilson of Midnapore, and made the following remarks:—

The coins sent by Mr. Wilson are rupees of two of the independent Muhammadan rulers of Bengal: viz., 15 are rupees of Shamsuddīn Ilyās Sháh, who reigned probably from 740 to 759 A. H. (= 1339-1357 A. D.), and 2 belong to his son Abúl Mujáhid Sikandar Sháh, whose reign probably extended to 792 A. H. (= 1389 A. D.): (see Blochmann's *Geography and History of Bengal*, in J. A. S. B., Vol. XLII, Part I, p. 303). Those of Shamsuddīn are probably all from the Fírúzábád Mint, though the name is only legible on four of them; the date of one of them, on which alone it is legible, is 745 A. H. This type of coin has been already described by E. Thomas, in the J. A. S. B., Vol. XXXVI, Part I, p. 57, (see No. 15). The two rupees of Sikandar Sháh are from the Muázamábád Mint, and dated 763 (ثلاثة وستين) and 762 respectively. This type also

has been described and figured by E. Thomas, *ibid*, p. 63, No. 19, and PL. II, fig. 12. The site of Muázamábád does not appear to be exactly known. Blochmann was inclined to identify it with Muázampúr in Sonárgaon in Eastern Bengal (see Thomas's *Chronicles*, p. 151, and Blochmann's *Geography and History of Bengal*, in J. A. S. B., Vol. XLII, pp. 235, 236).

I may take this opportunity to exhibit a coin which I found among others obtained for the Society's cabinet not long ago from a treasure trove discovered in the Sonthal Purganas. It is a coin of Sikandar Sháh, but its peculiarity is that it is of a Mint apparently hitherto unknown.

The margin reads :

صرب الہندۃ السکہ ملک حاوہستان عرف عصۃ کامرو سن تسع و خمسين و سبعماية

The name seems to be *Oháwalstán*, a place in *Kámru* (*Kámrúp*) or Assam, but I can find no information about it. Nearly all diacritical marks are omitted in the legend. The date of this rupee is 759. There were two coins of this kind in the collection. One belongs now to General Cunningham, the other has been acquired for the Society.

The other coins of this set consist of rupees of Shamsuddin Ilyás Shah, Mint Sonárgaon, dates 754, 755, 757; Mint Fírúzábád, dates 750, 754, 757; again of Sikandar Sháh, Mint Hasrat Jalál Sonárgaon, dates 757, 758; Mint Baldat Fírúzábád, dates 757, 758; again Shamsuddin Fírúz Sháh (702-722 A. H.), Mint Lakhnautí, date 715; again Nasrat Sháh, bin Husain Sháh, Mint Khalifábád, date 925 (during his father's lifetime). See J. A. S. B., Vol. XXXVI, p. 45, and Vol. XLII, p. 297.

The following papers were read—

1. *On the Earthquake of the 31st December, 1881.*—By LIEUT.-GENL. J. T. WALKER, R. E., C. B., F. R. S., *Surveyor General of India.*
(Vide Plates III, IV.)

On the morning of the 31st December, 1881, an earthquake occurred in the Bay of Bengal, which operated with considerable violence in the neighbourhood of the Andaman and Nicobar Islands, and with more or less violence along the entire length of the west coast of the Bay, from Ceylon to Calcutta, and was also felt, though comparatively slightly, at various points on the east coast. In addition to the ordinary shocks produced by the waves of force acting through the ground, the surface of the ocean was greatly disturbed, and waves were formed which continued to roll against the coast lines for several hours after the cessation of the earth-waves, which lasted for only a few seconds. The clerk in charge of the tidal observatory at Port Blair reported a great disturbance of the surface of the sea to have taken place there, which had violently agitated the pencil of the self-registering tide gauge, causing it to oscillate in the course of a few minutes through spaces nearly equal to the entire normal semi-diurnal oscillation, and after a time to tear the paper of the diagram; this had

alarmed him so much that he stopped the clock and did not restart it for some hours, when there was less agitation of the sea-surface; he then found by the diagram that the earthquake waves were still existing and were following one another with great regularity; and they continued to do so for about twenty-five hours after the first shock of the earthquake was felt, when they died away. The diagrams at all the other tidal stations, for the same day, were then examined, and evidence of a succession of ocean-waves caused by the great earth-wave was unmistakeable at all the stations on the west coast of the Bay and at Dublat station—at the south end of Saugor Island—as well as at Port Blair. There was evidence of slight disturbance at Diamond Harbour, 38 miles up the Hooghly beyond Saugor Island; but there appeared to have been no disturbance whatever either of river-surface at Rangoon and Moulmein, or of ocean-surface at Amherst, and these are the only points on or near the east coast of the Bay at which tidal registrations were being taken.

Diagrams of the disturbed tidal curves—reduced from the original records—are here given to indicate what actually took place at each spot, and at the same moment of time; for the latter purpose, all the hour lines of the diagrams have reference to local mean time at Port Blair. The curves from midnight of the 30th December up to the time when the sea-waves began to reach each station—which falls between 8 A. M. at Port Blair and 1 P. M. at Dublat, and possibly was as late as 3 P. M. at Diamond Harbour—are normal in every instance; and thus by comparing them with the curves for the remainder of the twenty-four hours, the influence of the earthquake in disturbing the normal tides is readily seen. For Port Blair and Negapatam the normal curves are drawn below the actual curves; at the former place the diagram was torn by the pencil, and the record is not continuous; at Negapatam the curve from midnight up to the commencement of the sea-waves is vibratory, and not firm, as at all the other stations; but there the curves are normally

	H.	M.	
Diamond Harbour	0	18	vibratory, probably because the piping, connecting the well of the gauge with the sea, ends in shallow water and has not been carried out far enough into the sea. The longitudes of the several tidal stations west of Port Blair, in time, are given in the margin.
Dublat... ..	0	20	
False Point... ..	0	24	
Vizagapatam	0	38	
Madras	0	50	
Negapatam... ..	0	52	
Paumben	0	54	

Both the officers in charge of the tidal operations, first Major Hill and afterwards Major Rogers, have taken much pains to ascertain all the facts of the primary 'Great earth-wave' and the subsequent 'Sea-waves.' It so happened that, at the time of the occurrence of the earth-wave, Major Rogers was measuring angles with one of the great theodolites of this

Survey at a station on the Island of Kisseraing, below Tenasserim, on the east coast of the Bay, as a part of the operations which are described in paragraph 34 of the Report of the operations of the Survey of India for 1881-82. He writes that he "saw the earthquake before feeling it," as he was at the moment observing a signal—distant some 15 miles—which appeared to rise and fall in the field of the telescope; on looking at the levels of his instrument, he found that they were violently agitated. He immediately recorded the time at which the phenomenon occurred. Subsequently he ascertained that the earthquake had been felt at almost the same moment, at Madras and False Point, on the opposite coast. Thus then Major Rogers, assuming the great earth-wave to have travelled with equal velocity in all directions from the origin or centre of impulse, considers that the origin must have been situated at some point in the Bay nearly equi-distant from Madras, False Point, and Kisseraing,—not in the centre of the triangle joining the three places, but more to the south, towards the line joining Port Blair and Negapatam, which was probably the line of greatest disturbance, as at those places the sea-waves were greatest.

It is remarkable that there should be no indication of any sea-wave at either of the tidal stations at Rangoon, Elephant Point, Moulmein or Amherst. This may be due to the circumstance that the belt of islands and shoals which extends from Cape Negrais down to the Island of Sumatra forms a barrier to waves issuing from an origin near the centre of the Bay; the sea-waves were propelled with great violence against these islands on all sides and over the surrounding shallows, but they seem to have died away rapidly in the deep sea beyond. Moreover, the great earth-wave must have operated with far greater force towards the west than towards the east of the centre of impulse; for violent shocks were felt all along the west coast of the Bay, and to a considerable distance inland, whereas on the coast the shocks were very slight and barely perceptible.

The accompanying Chart of the Bay of Bengal shows the positions of all the tidal stations on both coasts, the trigonometrical station at Kisseraing, and Major Rogers' assumed centre of impulse. It also gives the values of all the soundings in the Bay which are believed to have yet been taken. Major Rogers' report is also annexed *in extenso*, and will be found to contain much additional matter of interest, including estimates of the respective velocities of the earth-wave and the primary sea-waves. It is believed that so full an account and such precise details of the phenomena of an earthquake have rarely been acquired hitherto. That they have been obtained in the present instance is mainly due to the existence of the many tidal stations which have been established on Indian coasts.

Memorandum by Major M. W. ROGERS, R. E., Deputy Superintendent, 4th grade, on the earthquake of the 31st December, 1881, and the great sea-waves resulting therefrom, as shown on the diagrams of the tidal observatories in the Bay of Bengal.

Port Blair mean time is used throughout. Latitude $11^{\circ} 40' 30''$ N., longitude $92^{\circ} 45'$ E.

The tide-wave can be traced clearly on the diagrams at seven tidal stations, *viz.*, Port Blair, Paumben, Madras, Negapatam, False Point, Dublat, and may be suspected on an eighth, *viz.*, Diamond Harbour, on the Hooghly.

At Port Blair, in the Andaman Islands, the first indication of the shock is at 7h. 42m. A. M., and this, I am inclined to think, is due to the earth-wave, or rather to the forced sea-wave, which is formed when the earth-wave gets into shallow water; for the tidal curve goes on undisturbed for some 30 minutes afterwards, and it is not until 8h. 10m. A. M. that the first wave is recorded, followed by others in succession at about 15 minutes' interval, with a height of about 3 feet from crest to hollow. The diagram is unfortunately incomplete, for the pencil of the gauge, in its violent oscillations, caught in and tore the paper of the diagram, and the clerk, being frightened, stopped the driving clock, which was not started again until 1 P. M. There is evidence that the waves continued to follow one another with great regularity until about 3 P. M., when they became of a much smaller size, but are traceable until 9 P. M. Small shocks were felt on Ross Island all that day, and the violence of the great shock, which damaged the barracks and did other injury, seems to indicate that the centre of impulse could not have been far from the Andamans.

At Madras, there is a trustworthy time for the advent of the earth-wave; it is obtained from the Telegraph Office, where the shock affected the recording instruments. It occurred at 7h. 56m. A. M. (7h. 5m. 45s. Madras time), whilst the great sea-wave reached at 10h. 10m. A. M., and continued until 7 P. M., with intervals of about an hour from crest to crest, and the influence of the disturbance can be traced until 10 P. M.

At Negapatam, the first and largest wave came in at 10h. 10m. A. M., with a height of nearly four feet from crest to hollow, and it was succeeded by a series at about half hour intervals, which continued until midnight. Judging from the diagrams, the sea at this port seems to have been more affected by the earthquake than at any other.

At Paumben, the first wave was registered at 11h. 35m. A. M., and was followed until midnight by a succession of waves with about two hours' interval between them.

At Vizagapatam, the first wave was recorded at 10h. 48m. A. M., and

from that time there was a succession of small waves at irregular intervals until past midnight.

At False Point, the diagram shows the passage of the earth-wave, or forced sea-wave, at 7h. 54m. A. M. The pencil seems to have been moved rapidly up and down a small distance for some minutes, and the clerk notes that the building was shaken by an earthquake. The sea-wave here is hardly indicated. Its first appearance is at 11h. 12m. A. M., and there is a second one at 1 P. M.

At Dublat, the wave appears to have arrived at 1 P. M., and a second, one hour afterwards; there is also an indication of a third at 3 P. M.

At Diamond Harbour, the indications of the wave are untrustworthy, and very slight. If felt at all, it was at about 3 P. M.

Looking over the data at our disposal, I find that the shock, *i. e.*, the earth-wave, was recorded as felt at Madras, Coconada, Vizagapatam, Gopálpur, False Point, Calcutta, Port Blair, and Kisseraing, an island in the Mergui Archipelago in latitude $11^{\circ} 39' N.$, longitude $90^{\circ} 31' E.$, and also on board a ship, *The Commonwealth*, in latitude $5^{\circ} 55' N.$, longitude $92^{\circ} 49' E.$

Of these the times of the shock at Madras, False Point, and Kisseraing were probably recorded correctly within a minute. The time at Madras was recorded in the Telegraph Office, and given to the nearest second. The time at False Point was recorded on the tidal diagram, and also by Mr. Rendell, of the Survey, who was leveling a few miles from False Point, and whose recorded notice of the time at which he felt the shock agrees to the minute with the tide-gauge record.

At Kisseraing I was observing at the trigonometrical station there with a 24" theodolite, and saw the earthquake before feeling it, the heliotrope (distant some 15 miles) to which I was observing appearing to rise and fall in the field of the telescope, and the levels of the instrument being violently agitated. The motion was, to my feeling, barely perceptible, but the recorder and other men with me said that they felt it distinctly. It was not, however, felt by several of the officers of the Indian Marine, who were on the island that morning, thus proving that it was not a severe shock, though plainly noticeable by instrumental means.

At Madras, False Point, and Kisseraing, the earth-wave was felt at about the same minute—7h. 55m. A. M. On the hypothesis that the strata between them and the centre of impulse are homogeneous, this centre was equi-distant from them, and would be at a spot in the Bay of Bengal in latitude $11^{\circ} 55' N.$ and longitude $89^{\circ} 33' E.$

There is no reliable evidence on the subject of the velocity of earth-waves; it varies with the nature of the strata through which it passes and the violence of the initial shock, and also on the depth of the locus of the centre of impulse.

If we assume that the centre of impulse in this case was at the point mentioned, it will be found that it, and Port Blair and Kisseraing, are almost in a straight line. The distance from Port Blair to Kisseraing is 400 miles; and if we assume that the mark on the diagram at the former place at 7h. 42m. was due to the earth-wave, it took 13 minutes to travel 400 miles, which gives a rate of 30 miles per minute—a velocity which I find mentioned in books on the subject as probable under favourable circumstances. With this velocity the central shock should have taken place at 7h. 35m., the distance to Madras, &c., being a little over 600 miles. The distance from this assumed centre of impulse to Port Blair is 218 miles, which would take seven minutes in transit and cause the shock to be felt there at 7h. 42m.

This fixing of the locality of the centre is of course merely hypothetical: the whole of the region is volcanic. Narcondam and Barren island, to the east of the Andamans, are volcanoes, the latter having been in eruption as late as 1792; the only thing certain is that the centre must have been not far from Port Blair and Car-Nicobar, and about equi-distant from the whole of the east coast of the Bay of Bengal, and also it must have been subaqueous in order to have caused such distinct tidal waves.

All the times of the earth-wave reaching places on the west side of the Bay agree very fairly; but in all the cases except those mentioned, the times are not likely to be sufficiently accurate to aid in the investigation.

The force of the earthquake was great at Port Blair, where it did damage to the barracks, &c., and at the Island of Car-Nicobar it was felt severely, the huts of the natives and many of their palm-trees being thrown down.

Several slight shocks were felt at Port Blair on the same day and the two succeeding days, and *The Commonwealth*, which, as mentioned, felt the shock of the 31st December, felt three shocks again on the 1st January off the Island of Car-Nicobar. All this points to there having been considerable subterranean disturbances in those regions at that time.

I can find no trustworthy indication of the direction of the motion as felt at the various places. At Madras there are three estimations of it: one north to south, and two others north-east to south-west; whilst the clerk of the tidal observatory says that there were two shocks—the first north to south and the second east to west. Mr. Rendell, at False Point, states that the direction appeared to him to be from north-west to south-east, whilst a person at Calcutta says that it appeared to go from west to east. At Kisseraing Island the motion was so slight that I could not decide on any direction. My first impression was that it came from the west, but after careful consideration I could not decide sufficiently satisfactorily to place it on record.

The great tide wave, of which we have full evidence on the tidal diagrams, was felt, as was to be expected, a considerable time after the shock, varying with the distance and other causes, such as wind and its velocity of translation, which again varies with the depth of the water at any given point.

The wave reached Port Blair first at 8h. 10m., or, if we assume the foregoing idea of the locality of the centre of disturbance and time of the original shock, in 35 minutes, with an average rate of 6·2 miles per minute. It reached Madras and Negapatam at 10h. 10m., two hours later than Port Blair. These places are 614 and 640 miles from the assumed centre, and this would give a velocity of 4 miles per minute.

At Paumben the first wave came in at 11h. 35m., or more than one hour later than Negapatam; but owing to the intervening land and straits, I do not think any estimate of velocity can be made. At Vizagapatam the wave arrived at 10h. 48m., about 40 minutes later than Madras, giving a velocity of 2·9 miles per minute. At False Point the wave arrived at 11h. 12m., or 24 minutes later than at Vizagapatam, giving the same velocity of 2·9 miles per minute. The wave reached Dublat at 1 P. M., giving a velocity of a little over two miles per minute.

The direction of the wind all day was N. N. E., which would tend to reduce the velocity of the wave on its road to the northern ports.

2. *A New Meteorological Instrument for determining the quantity of dew deposited on clear nights.*—By J. BRIDGES LEE, M. A., F. G. S., F. C. S., F. Z. S. (Vide Plate VI).

There is much to be said upon the importance of securing a regular register of the so-called dew-fall and upon various meteorological problems connected therewith. When sufficient leisure is available, I propose to offer some detailed observations to the Society upon some of those problems: meanwhile the present non-existence of any satisfactory dew-recording apparatus at our Meteorological Stations must strike all persons interested in the study of atmospheric physics as a serious defect, and that defect I would seek to help to remedy by describing an instrument which will afford a fairly accurate register and can be made self-recording.

Description.

(1.) Take a long deep hollow cylinder of glass, porcelain or earthenware. Protect this externally by wood or metal, and fit it with a frame, work or stand which will support it firmly in a vertical position.

(2.) Take a quantity of pure mercury sufficient to fill $\frac{3}{4}$ or $\frac{2}{3}$ or more of the whole cylinder. Pour this into the cylinder.

(3.) Take a short solid cylinder of Platinum, the diameter of which shall not exceed $\frac{1}{4}$ or $\frac{1}{3}$ of the internal diameter of the cylinder.

(4.) Connect this cylinder at one end rigidly with a solid cylinder of iron of corresponding diameter.

(5.) Connect the free end of this iron cylinder with a thin solid uniform rod of iron cased externally with a thin hollow cylinder of Platinum.

(6.) Connect the free end of this rod with the lower surface of a thin horizontal sheet of metal one foot square, or of any determinate size such as may be found most convenient in practice.

(7.) Cover the upper surface of the plate with a moderately thick layer of non-heat-conducting material.

(8.) Cover the upper surface of this non-heat-conducting material with a thin film of lamp-black or such other material as it shall be found most convenient to employ as a radiator of heat.

(9.) Close the main hollow cylinder above with a horizontal disc of the same material or of glass with a circular aperture in the centre of sufficient diameter to allow of the free passage of the composite rod up and down.

The essentials of the apparatus will then be complete, except perhaps that it may be found necessary or advisable to interpose between the top of the composite iron platinum rod and the horizontal disk a short cylindrical rod of ivory to prevent downward conduction.

The relative proportions and dimensions of all the various materials employed should be such as to secure the following conditions:

(a.) That the elongated composite cylinder (with its supported plate) should float vertically in the mercury, the plate being carried when dry to a considerable height above the top of the containing cylinder.

(b.) That a very slight weight on the upper surface of the plate shall cause an appreciable depression of the composite float.

(c.) That the effects of heat and cold, producing expansion and contraction of all the various components of the apparatus, may be such that they will compensate each other.

(d.) That the upper radiating surface should be fairly constant in character and not liable to be easily abraded by wind or injured by the various other atmospheric changes to which the instrument will be liable to be exposed.

These results can perhaps all be obtained by the aid of a little arithmetic and a little initial care in the construction of the instrument, but, if we suppose that all the conditions cannot be completely fulfilled, it will always be possible to furnish each instrument with a table of errors.

The whole instrument should be provided with a cover, and it should be uncovered only on cloudless nights, when, in proportion to the quantity of dew which accumulates on the upper plate, the float will be forced downwards into the mercury in which it floats.

To read the instrument there may be a series of vertical graduations or a cathetometer may be used or a photographic self-recording apparatus worked on the usual well known principles, or, perhaps best of all, a thin horizontal stilet may be carried by the rod or from the edge of the disc which will trace a curve upon a vertical sheet of glazed card coated with lamp-black, the card being driven horizontally at a slow uniform rate by clockwork.

Mr. BLANFORD agreed with Mr. Bridges Lee that a good simple instrument for recording the deposit of dew would be a very useful addition to the equipment of Meteorological Observatories. He hardly felt in a position to offer an opinion on the value of that described by Mr. Bridges Lee. The principle involved was obviously that of the hydrometer, and therefore perfectly valid; but, in matters of this kind, so much depended on the practical details of the arrangement in which the principle was carried out, that, until one saw the instrument before one, it was impossible to form an idea of its practical working.

3. *Notes on the History of Orissa under Muhammadan, Maratha and English rule.*—By JOHN BEAMES, B. C. S.

(Abstract.)

This paper is a collection of all the information regarding the past history of Orissa in general and of the district of Balasore in particular which Mr. Beames has been able to collect from various sources. It was written as Chapter II of a manual of the district of Balasore, of which Mr. Beames was Collector during 1869-73, but was never published. Recently, being engaged in some researches regarding the history of his present official charge, the Burdwan division, Mr. Beames has had occasion to refer to it, and as he knows of no compilation containing all the facts contained in it, he has thought that it might prove useful if it were printed.

DR. RAJENDRALALA MITRA commented at some length on the paper. He thought Mr. Beames had brought to a focus a large mass of information, and put it forth in a very readable form, but he had made a sad omission, and that detracted much from the value of his essay as a historical contribution. Sterling's memoir in the *Researches* of the Society contains a very full analysis of Orissan Chronicles of the Hindu period, and most of its shortcomings had been supplied in Dr. Hunter's excellent history, which not only corrects all such errors as were unavoidable in a first attempt, but supplies a précis prepared by the late Mr. Blochmann of all the information to be had in the works of Muhammadan historians. In the volume devoted to Orissa in the 'Bengal Gazetteer' Dr. Hunter has further improved upon his previous work, and Mr. Toynbee's 'History of Orissa' gives a very full account of the British connection with Orissa.

Coming to a history of Orissa after reading these works, one naturally expects something new, or some information as to what is taken from these authors and what is original discovery. But Mr. Beames supplies no such information, and systematically avoids all reference to his predecessors, making no distinction between what he has taken from old records, and what is based on mere local tradition of the present day. The paper was written between 1869 and 1873 or before the dates of the *Gazetteer* and Mr. Toynbee's book: that perhaps accounts for some omissions, but in publishing a paper in 1883, it is desirable that due acknowledgment should be made of previous writers, and the new materials collected should be duly labelled. It would have been a great accession if Mr. Beames had given extracts from the works noted in Mr. Blochmann's *précis*, but he has not done so, nor, as far as can be made out, utilised them in any way.

The name of the paper appeared to Dr. Mitra as misleading. The paper is devoted principally to Balasore, but it is called a 'History of Orissa.' Balasore was only one-third, and that the most insignificant third, of Orissa.

Mr. Beames starts by saying that the country between the Kanabans and the Subarnarekhá rivers, *i. e.*, Balasore, "was totally uninhabited and covered with jungle." This was probably the case in some remote pre-historic period, soon after the tract was reclaimed from the sea, but as Mr. Beames seemed to assume that such was also the case in the 13th or 14th century of the Christian era, Dr. Mitra urged that such was not the case, and he believed that there was not a tittle of evidence to show that the Aryans entered Orissa from the west, following the course of the Mahánadí. Mr. Beames assumes that the Aryans proceeded from between Arrah and Gaya to Orissa. Philological evidence is entirely in favour of the theory of the migration from the Behar province, but the determination of the exact locale between Arrah and Gaya was the merest assumption. But, taking for granted that they did go from Arrah or Gaya, the route they must have followed to come to the Mahánadí from the west would be, first a westerly course to Nagpur, thence a southerly course down Sambhalpur to reach the Mahánadí in or near Berar, and then an easterly one to Orissa, and this has to be accepted as an historical fact, because the straight cut through Balasore was not practicable, because that district was then an impenetrable jungle. This major, however, has no leg to stand upon. Mr. Beames urges that the name of the district shows that it was once a jungle. The name, he says, is a corruption of 'Banesvara' or 'the lord of the forest,' referring to the presiding divinity of the place, and the district must have therefore once been a forest, but he does not adduce an iota of evidence to prove that the name is really a corruption of the kind, nor does he show that Dr. Hunter was wrong when he

said in his history that Balasore is derived from *Bāla*, youthful, and *Īśvara*, a lord, = the youthful lord. If one would be disposed to build a theory on this similar to that of Mr. Beames, the district would be the abode of perpetual juvenescence. If we accept the original name to be *Baneśvara*, still the induction would not necessarily be correct, for *Bana* in India means a grove, a park, or *tope* as well as a forest; nor would the name of a town beginning with 'forest' imply the whole district to have been a forest. Such an argument was adopted by Mr. Wheeler to prove that the districts of Delhi and Hurrianah were an uninhabited forest at the time of the Pāṇḍus, because the Pāṇḍus are said to have burnt down the Khāṇḍava forest. Adopting this line of argument, as well might the New Zealander of Macaulay hereafter conclude from the name of New Forest that the whole of Hampshire including Surrey and Sussex was a forest in the reign of Her Majesty Queen Victoria, or, coming to India, declare that the whole of Shahābād was a forest at the same time, because the mutineers under Kumar Singh found shelter in the forest of Jagadisipur in 1858. To drop, however, the *a priori* line of argument, positive facts are abundant to show that Balasore was a high road between the north and the south from a remote period of antiquity. According to the Buddhist records, on the death of Buddha, in the 6th century before Christ, the king of Kalinga obtained the left canine tooth of the saint, and consecrated it at Danton, on the north of Balasore, and the present name of the town is a corruption of *Dantapura* 'the town of the tooth relic.' Subsequently, a king of Magadha assailed the town, and carried away the relic to his capital. It was brought back by a subsequent king of Kalinga, and when a second attempt was made to take it away to Magadha, it was sent on to Tamluk, in Bengal, to be thence forwarded to Ceylon. In the fourth century before Christ, Aira, king of Kalinga, claims, in the Hathigumpha inscription, to have defeated one of the Nanda kings of Behar. In the third century before Christ, Aśoka sent his missionaries to Cuttack, and caused his edicts to be recorded on the rocks of Dhauli. Surely no one will urge that all this intercourse took place *viâ* Central India along the banks of the Mahānadi. In the fifth century, Yayāti Keśari, a lieutenant of Bhava Gupta, of Magadha, came down from the north, established his first metropolis at Yājapura, and thence proceeded to Cuttack and further south. At the beginning of the same century, the Chinese traveller Fa Hian came to Tamluk, and wanted to proceed down south in his course to Ceylon, but was dissuaded by accounts of fatigue and difficulties, not at Balasore, but in the Telinga country, much lower down. In the seventh century, Hiouen Tshang travelled from Tamluk to Puri without meeting with any difficulty. In the face of these facts, it is too much to assert that the first mention of a high road we have is in the fifteenth century when

Chaitanya travelled from Bengal to Puri. The fact is, Dr. Mitra thought, that Mr. Beames, having started the theory of the Uriyas having had no intercourse with the Bengaliz, has been obliged to create this forest barrier to prove that there could have been no former intercourse. The philological arguments to which he had incidentally referred were not tenable. But as Dr. Mitra had already pointed this out some ten or twelve years ago, and his position had not been since proved to be wrong, he did not wish to take up the time of the meeting by dwelling on them again.

4. *On new and little-known Rhopalocera from the Indian region.*—By
L. DE NICEVILLE.

This paper will be published in the Journal, Part II, 1883.

LIBRARY.

The following additions have been made to the Library since the Meeting held in February last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS, *presented by the respective Societies and Editors.*

- Baltimore. Johns Hopkins University,—Circulars, Vol. II, No. 20.
Berlin. Kon. Preus. Akademie der Wissenschaften,—Sitzungsberichte,
Nos. I—XVII.
Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 2.
Brussels. Musée Royal d' Histoire Naturelle de Belgique,—Bulletin, Vol.
I, No. 2, 1882.
———. Société Royale Malacologique,—Procès-Verbal, 1st April to 2nd
July, 1882.
Calcutta. Geological Survey of India,—Memoirs, Vol. XIX, Part 3.
———. Indian Meteorological Memoirs,—Vol. II, Part 1.
———. Original Meteorological Observations,—January, 1882.
Copenhagen. Aarboger for Nordisk Oldkyndighed og Historie,—Part 2,
1882.
Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. III, Nos.
6-7.
London. Academy,—Nos. 559-561.
———. Athenæum,—Nos. 2882-2884.
———. Institution of Civil Engineers,—Minutes of Proceedings, Vol.
LXX, 1881-82.

- London. Institution of Mechanical Engineers,—Proceedings, No. 3, August, 1882.
- . *Nature*,—Vol. XXVII, Nos. 690-692.
- . Royal Astronomical Society,—Monthly Notices, Vol. XLIII, No. 1, November, 1882.
- . Royal Geographical Society,—Proceedings, Vol. IV, No. 12, December, 1882; and Vol. V, No. 1, January, 1883.
- . Royal Microscopical Society,—Vol. II (Ser. II), Part 6.
- . Zoological Society,—Proceedings, Part 3, 1882.
- . ———. Transactions,—Vol. XI, Part 7.
- Moscow. Société Impériale des Naturalistes,—Bulletin, Vol. LVI, No. 4, 1881; and Index to Vols. I-LVI.
- Paris. Société de Géographie,—Compte Rendu des Séances, Nos. 1-2, 1883.
- . Société Zoologique de France,—Bulletin, No. 5, 1882.
- Rome. R. Accademia dei Lincei,—Atti, Vol. VII, Parts 1-2.
- . Società degli Spettroscopisti Italiani,—Memorie, Vol. XI, No. 11, November, 1882.
- Sydney. Royal Society of New South Wales,—Journal and Proceedings, Vol. XV.
- Vienna. K. k. geologische Reichsanstalt,—Abhandlungen, Vol. VII, No. 6; and Vol. X.
- . ———. Jahrbuch,—Vol. XXXII, Nos. 2-3, April to September, 1882.
- . ———. Verhandlungen,—Nos. 8-11, 1882.
- . Anthropologische Gesellschaft,—Mittheilungen, Vol. XII, Nos. 1-2.
- Zagreb. Arkeologickoga Druzstva,—Viestnik, Vol. V, No. 1.

MISCELLANEOUS PRESENTATIONS.

LIVERSIDGE, ARCHIBALD. *The Minerals of New South Wales*. Second Edition. 4to. Sydney, 1882.

THE AUTHOR.

General Report on Public Instruction in Bengal for 1881-82. Fcp. Calcutta, 1883.

BENGAL GOVERNMENT.

Report on the Administration of the Land Revenue Department of the Central Provinces for the revenue year 1881-82, ending 30th September, 1882. Fcp. Nagpur, 1883.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

First Report of the Curator of Ancient Monuments in India for the year 1881-82. 8vo. Simla, 1882.

CURATOR OF ANCIENT MONUMENTS IN INDIA.

Archæological Survey Reports, Vol. XV., 8vo. Calcutta, 1882.

HOME DEPARTMENT.

Annual Report on the Lunatic Asylums in the Madras Presidency during the year 1881-82. Fcp. Madras, 1882.

Annual Report on the Civil Hospitals and Dispensaries in the Madras Presidency for the year 1881. Fcp. Madras, 1882.

MADRAS GOVERNMENT.

International Meteorological Observations, for July 1881. 4to. Washington, 1882.

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RICHARDS, THOMAS. New South Wales in 1881: being a brief statistical and descriptive account of the colony up to the end of the year, extracted chiefly from official records. Second Issue. 8vo. Sydney, 1882.

Annual Report of the Department of Mines, New South Wales, for the year 1880. 4to. Sydney, 1881.

ROYAL SOCIETY, NEW SOUTH WALES.

Eighteenth Annual Report of the Sanitary Commissioner with the Government of India, 1881. Fcp. Calcutta, 1882.

SANITARY COMMISSIONER, GOVERNMENT OF INDIA.

Norwegian North-Atlantic Expedition 1876-78. VIII:—Zoology; Mollusca. 1. Buccinidæ, by Herman Friele. IX:—Chemistry. 1. On the Solid Matter in Sea-Water. 2. On Oceanic Deposits, by Ludvig Schmelck. 4to. Christiania, 1882.

THE COMMITTEE, NORWEGIAN NORTH-ATLANTIC EXPEDITION.

PERIODICALS PURCHASED.

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———. Sanders' Ergänzungs-Wörterbuch der Deutschen Sprache, —Parts 23 and 24.

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Göttingen. Gelehrte Anzeigen, —Nos. 3-6.

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Leipzig. Annalen der Physik und Chemie, —Vol. XVIII, No. 2.

- Leipzig. Beiblätter zu den Annalen der Physik und Chemie,—Vol. VI, No. 12; and Vol. VII, No. 1.
- . Deutsche Litteraturzeitung,—Vol. III, Nos. 48-52.
- . Hesperos,—Vol. II, Nos. 38-39.
- . Literarisches Centralblatt,—Nos. 49-52, 1882; and No. 1, 1883.
- London. Chemical News,—Vol. XLVII, Nos. 1208-1210.
- . Entomologist,—Vol. XVI, No. 236, January, 1883.
- . Entomologist's Monthly Magazine,—Vol. XIX, No. 224, January, 1883.
- . Journal of Botany,—Vol. XI, No. 240, December, 1882; and Vol. XXI, No. 241, January, 1883.
- . Journal of Conchology,—Vol. III, No. 10, April, 1882.
- . Journal of Science,—Vol. IV, No. 108, December, 1882; and Vol. V, No. 109, January, 1883.
- . Messenger of Mathematics,—Vol. XII, No. 8, December, 1882.
- . Mind,—No. 29, January, 1883.
- . Nineteenth Century,—Vol. XIII, No. 71, January, 1883.
- . Publishers' Circular,—Vol. XLVI, Nos. 1088-1089.
- . Society of Arts,—Journal, Vol. XXXI, Nos. 1574-1576.
- New Haven. American Journal of Science,—Vol. XXIV, No. 144, December, 1882.
- Paris. Annales de Chimie et de Physique,—Vol. XXVII, December, 1882.
- . Comptes Rendus,—Vol. XCVI, Nos. 2-4.
- . Revue Critique,—Vol. XV, Nos. 3-5.
- . Revue des deux Mondes,—Vol. LV, No. 2, 15th January, 1883.
- . Revue Scientifique,—Vol. XXXI, Nos. 2-4.

BOOKS PURCHASED.

- Annales auctore Abu Djafar Mohammed Ibn Djarir At-Tabari. Vol. I, Part 4. 8vo. Lugduni Batavorum, 1882.
- CAMERON, PETER. A Monograph of the British Phytophagous Hymenoptera (Tenthredo, Sirex and Cynips, Linné). Vol. I. (Ray Society.) 8vo. London, 1882.
- DISTANT, W. L. Rhopalocera Malayana. Part III. 4to. London, 1882.
- JOLY, N. Man before Metals. 12mo. London, 1883.
- MUELLER, F. MAX. Sacred Books of the East. Vols. XIV, and XVIII. 8vo. Oxford, 1882.
- Report of the Scientific Results of the Voyage of H. M. S. "Challenger" during the years 1873-76. Zoology, Vol. V. 4to. London, 1882.
- RIBOT, Th. Diseases of Memory: An Essay in the Positive Psychology. 12mo. London, 1882.
- STEWART, AUBBEY; and LONG, GEORGE. Plutarch's Lives. Translated from the Greek. Vol. IV. 8vo. London, 1882.
- Zoological Record for 1881. 8vo. London, 1882.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR APRIL, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 4th April, 1883, at 9-15 P. M.

The HON'BLE J. GIBBS, Vice-President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced:—

1. From the Hon'ble Rao Saheb Visvanath Narayan Mandlik,—Catalogue of Manuscripts and Books belonging to the Bhau Daji Memorial.

2. From the St. Xavier's College Observatory,—Observations taken from July to December, 1882.

3. From the Translator, through W. A. Clouston, Esq.,—Persian Poetry for English Readers, being specimens of six of the greatest classical poets of Persia: Ferdusi, Nizámí, Sádí, Jelál-ad-din Rúmí, Háfiz, and Jámí. With Biographical Notices and Notes, by S. Robinson.

4. From the Authors, —(1) Indische Essays, by Nisikánta Chattopádhyáya; (2) The Yátrás; or, the popular Dramas of Bengal, by Nisikánta Chattopádhyáya; (3) Note on the Páli Grammarian Kachcháyana, by Lieut.-Col. G. E. Fryer, with some remarks by Dr. A. F. R. Hoernle; (4) A Grammar of the Classical Arabic Language, translated and compiled from the works of the most approved or naturalized authors, Vol. I, by M. S. Howell; (5) Der Buddhismus in seiner Psychologie, by A. Bastian; (6) Remarks on certain dates occurring on the coins of the Hindu kings of Kábul, expressed in the Gupta Era and in Arabic (or Quasi-Arabic) Numerals: with Postscript, by Sir E. Clive Bayley; (7) On the Genealogy of modern Numerals, Part II, by Sir E. Clive Bayley.

5. From Babu Sailajanandam Agha, High Priest of Vaidyanath, through Dr. Rájendralála Mitra,—(1) Vaidyanatha-Mahatmyam; and (2) Purashcharana Rashambudhi.

6. From the Hon'ble J. Gibbs,—Plaster Cast from the estampage of a 100-goldmohur piece of Aurangzebe, exhibited at the January meeting.

The following gentleman, duly proposed and seconded at the last meeting, was ballotted for and elected an Ordinary Member :

Hon'ble C. H. T. Crosthwaite, C. S.

The following gentlemen are candidates for election at the next meeting :

S. A. Hill, Esq., B. Sc., Meteorological Reporter to Government, North-West Provinces, proposed by J. Eliot, Esq., seconded by A. Pedler, Esq.

Babu Rajkrishna Mukerjea, B. A., B. L., Calcutta, proposed by Babu Adharlal Sen, seconded by Dr. H. W. M'Cann.

The SECRETARY reported that the following coins had been acquired under the Treasure Trove Act :—

31 Silver coins from the Deputy Commissioner of the Santhal Pergunnahs found in the villages of Bir Gopalpur and Nasipur, Pargana Ambar, Subdivision Pakour, Santhal Parganas.

The HON'BLE J. GIBBS exhibited some gold Ramtinkis, and read the following note :

The first Ramtinki I ever saw was in 1852. It belonged to the late W. E. Frere, Esq., C. M. G. of the Bombay Civil Service: he procured it when he was at Dharwar in the S. M. country. It is now with the rest of his collection in the Museum of the Bombay Branch of the Royal Asiatic Society. It is concave, of pale gold, weighing 360 grains; it is much rubbed but has in the inner side 3 rows of figures.

I show a sketch of it in water colour, made for me by Mr. Rehatsic in Bombay. I tried to obtain such a coin for many years, but did not succeed until the period of the famine in 1877, when my brother-in-law, the Judge at Belgaum, hearing that a Borah was trying to sell one, sent and bought it for me. In the next two or three years I obtained as many as 8, and 3 of them I have every reason to believe were more than 900 years old: these are of gold, highly and unequally alloyed with silver, and the largest resembles in make, and as far as the figures can be made out, in style, that of Mr. Frere which I have above described. I divide the Ramtinkis I have procured into three different sets :

a. Those of very pale gold heavily alloyed with silver.

β. Those of pure gold or nearly so with very fine work.

γ. Those of pretty good gold and coarser work.

From the difference in weight and size and from what I have been able to learn, there are three sizes:

- (1.) The whole, or 'Ramtinki Varáha,' supposed to be 4 tolas.
 (2.) „ half „ „ Prátápa, „ „ 2 „
 (3.) „ quarter „ „ Dharana, „ „ 1 „

I have two of the whole coins (1): all the others in my collection, although varying in size and weight, may be classed as quarters (3). The only half coin (2) I know of is that above described as Mr. Frere's.

I now proceed to give the weights and descriptions:

- (1) 1. α pale gold, 4 rows of figures wt. 696 grs., much rubbed.
 2. β pure gold, 2 rows of figures wt. 690 grs.
 (2) [Mr. Frere's pale gold, 3 rows of figures
 wt 360 grs. = exactly 2 tolas]
 (3) 3. α pale gold, single row of figures, wt. 120 grs., much rubbed.
 4. α pale „ do. „ 100 grs., do.
 5. α pale „ do. „ 166 grs., very flat, in good order.
 6. β pure „ single row wt. 160 grs.
 7. β pure „ „ wt. 150 grs.
 8. γ good „ coarse work, single row of figures, wt. 196 grs.
 9. γ good „ „ „ „ 200 grs.
 10. γ good „ „ „ „ 193 grs.

The backs of some have various marks on them,—the double triangle, often the standing figure of Hanuman, with some very unintelligible Nagari letters not hitherto read.

I have seen two other large Ramtinkis: one belonged to the great Shankaracharya-swami, the head of a large religious community who travels about the Deccan. I saw him at Poona, and one of his most precious relics was a large Ramtinki. I was not allowed to touch it, but it was held for me to examine: it was larger than my largest of pale gold and had 4 rows of figures in it, was more deeply cup-shaped than any I have seen: I should say it weighed more than 4 tolas.

Mr. J. Proctor Watson of Bombay has one which he purchased from a Marwari: it is of pretty good gold, of coarse and rough work and weighs $8\frac{1}{2}$ tolas: it would I presume be a double Ramtinki.

I have also an electrotpe of one in the Mysore Museum, kindly sent me by Capt. Stuart Mackenzie: it is in excellent preservation and resembles one of my old pale ones, No. 3.

I have found great difficulty in getting any reliable information on the subject of these coins or medals: for the best I am indebted to Rao Bahadur Trimulrao Venktish Inamdar, a pensioned Small Cause Court Judge, and now an Honorary Magistrate at Dharm, S. M. C., who not only has made many inquiries for me on the subject, but himself procured for me the oldest and most curious specimens I have.

The flat medal which is engraved in the Society's Proceedings for

1880, exhibited by General Pearce, is not a Ramtinki at all, but is, I believe, one of the medals made for giving to rich pilgrims when leaving the temple of Tripati in the Madras Presidency: they are quite modern. I have a variety of this sort which I exhibit.

The result of my inquiries leads me to the conclusion that the oldest, and perhaps the only really genuine, are those of the palest gold, while the more pure gold specimens are modern. I do not think any of the *a* class are less than 600 years old, except No. 5, which I believe to be about 100: all the others are subsequent to that; No. 10 was known to have been in one family in Mysore for more than 50 years when the exigencies of the famine obliged them to sell it to a travelling Borah, from whom it was purchased for me; another, No. 7, was also a family relic for many years in another family.

The story on them all, illustrated to a greater or less degree, is that of Rama and Sita, on their reconciliation and her proving her purity after being seized and taken off to Lanka by Ravana, taken from the *Ramáyana*. The rows of figures are composed of men and monkeys, the latter forming part of the army of Hanumán by whose means Sita was rescued. In all the large ones, Hanuman is represented in the centre of the 2 rows below Ram and Sita holding up a flower to them: in the smaller, he alone sits just below Ram and his consort. Sita in some is represented on Rama's lap, in others seated by him on the *gadi*; the attendants have chouries and the umbrella. There are three figured in Marsden, Pl. XLVIII: these are now with his collection in the British Museum.

I am anxious to prepare a paper in greater detail and to get a plate made of some of the specimens, and shall therefore be exceedingly grateful for any information that those to whom this No. of the Proceedings may be sent can afford me.

The question of the age of these pieces is one on which I have failed to get any satisfactory information. One learned Pandit informed me they were 27 lacs of years old; another modified this, bringing it down to the more moderate figure of about $8\frac{1}{2}$ lacs. Another set the age at 3,500 years, while Marsden merely says they are believed in southern India to have been the money of the demi-god or hero Ramachandra and coined at the Island of Ramesseram, but attempts no date.

The 3 pale gold coins which are certainly the oldest, *viz.*, the whole and the two quarter-Ramtinkis have a history. The great Sankarácárya, the reformer of the Shiva sect, who flourished in the 9th century A. D., established branch "maths" or hermitages in various places: one was at Koodalji in the Mysore State. In the course of years the Swami in charge of the math, having become poor, about the time of the famine mortgaged the relics, among which were these 3 Ramtinkis, and on his failing to redeem

them they became the property of the Banker and from him they were procured for me by Rao Bahadur Trimulrao.

These coins were used daily in the worship, one part of which consisted in bathing the idols with milk, curds, ghi, sugar, honey, fruit, then water, and finally with gold: this latter act was performed by pouring gold pieces over the idol's head. The result of this for many years accounts for the battered appearance these three pieces have, but it is evidence of their antiquity—they, it is said, had been handed down from the foundation of the math about 900 or 1000 years ago.

A brass casting of the arms of the old East India Company found by Mr. T. A. M. Gennoe in a Hindu Temple in the Faizabad District, N.-W. P., was exhibited, and the following memorandum by Mr. H. Rivett-Carnac read on the subject:

I forward to the Society a brass casting of the arms of the old East India Company sent to me by Mr. T. A. M. Gennoe of Faizabad, who found it occupying a position in a Hindu temple under the circumstances noticed in the extract from his letter enclosed. The casting in all probability once ornamented some regimental big drum of former days, and the attention paid to it in this temple was apparently not so much due to its being symbolical of "Jan Compani Bahadur" or a mysteriously directing No. I, but the chance resemblance of the rampant heraldic lions to some brass backs of shrines sometimes met with in Hindu bazaars.

Extract from Mr. Gennoe's letter referred to:

"I am sending you the armorial bearings of the old East India Company which I found in a temple dedicated to Bharata, where, along with several Hindu idols, it was worshipped, the men told me, for ever so many years as a Hindu deity. It used to be bathed and anointed with sandal wood every day with the rest of the *Murats* with all the customary formulæ of the daily Hindu ritual. The old Mahunt was quite pleased with his possession, and refused at first to allow me to touch it, but I was able to convince him that the so-called deity was the escutcheon of the *Sirkar* Company. He then gave it to me. It is an interesting relic of the exotic phase of Hindu worship. I think therefore it is worthy of translation from the niche of Bharata's temple to a Museum."

Some Geological specimens received from Prof. Dr. Fischer, Freiburg in Baden, and forwarded by MR. H. RIVETT-CARNAC were exhibited, and the following note by Mr. Rivett-Carnac read:—

Dr. Fischer of Freiburg has been good enough to send me some geological specimens, which may be of interest to the Society.

They consist of fragments of nephrite from Turkestan (white) and from Siberia and New Zealand (green), and one small piece of Burmese jade which must be well known in India.

To these Dr. Fischer has added a fragment of "*chloromelanite*" which I understand to be of great rarity. I learn from Dr. Fischer that although celts of this material are found in Europe, the locality of the rock is still a mystery.

The last specimen is a small nephrite knife from the lake dwellings of Manrach, Lake of Constance.

I should be glad of any information regarding "*chloromelanite*."

When the specimens have been inspected by the Society, I should wish them made over to Dr. Anderson for the India Museum.

MR. RIVETT-CARNAC subsequently wrote :—

I have something more about *chloromelanite* from Dr. Fischer. He says the nephrite hatchets are found on the Swiss lakes in some quantities, but *not* in Germany, or France. Celts of jadeite, and *chloromelanite* are found in Germany west of the Elbe, all over France, in Italy, Greece, and Asia Minor. *Chloromelanite* is found with jade in the form of scarabs in Egypt. But *chloromelanite*, he adds, has never been found in the mass.

I am curious to know whether there is any of this mineral in the Museum?

MR. MEDLICOTT, Superintendent, Geological Survey, to whom the specimens were submitted, sent the following note :—

"*Chloromelanite*" is not quoted in any work on mineralogy we possess, even in Dana's latest Supplement, of 1882. One would presume it had some affinity to the mineral "*chloromelan*" or 'cronstedtite,' but this cannot be, for this mineral has only a hardness of 2·5 whereas the substance under reference is over 7, harder than ordinary jade.

The following papers were read—

1. *Note on some further Relics from Sankissa, Fatehgarh District, N.-W. Provinces, India.*—By H. RIVETT-CARNAC, C. S., C. I. E., F. S. A.

This will be published in the Journal, Part I, 1883.

2. *Preliminary Report on comparative observations of air-temperature and humidity at different elevations above the ground-surface.*—By DR. H. WARTH, Professor of Natural Sciences, Forest School, Dehra, N.-W. Provinces. Communicated by H. F. BLANFORD, F. R. S., Meteorological Reporter to the Government of India.

1. The ground observatory which is called No. 1 in the records is on grass land in the compound of the Forest Office. There are few trees about. The nearest group of trees, with a height of about 40 feet, is 100 feet distant from the observatory. The shed is according to the standard

pattern, thatched with straw. It differs herein from the shed in the Trigonometrical Survey Office. The Trigonometrical Survey Office shed has not only more trees round it, but is also enclosed by lattice work. Hence the means of the daily dry minima were at the Trigonometrical Survey 5·8° higher during the time from 1st of October to the 31st of December, 1882. Further the means of the daily dry maxima at the Trigonometrical Survey were 2·6° lower during the same period.

As will be seen from the records, the memo. which was written by Mr. Blanford on the 8th of October, 1879, is taken for guidance.

2. The elevated observatory called No. 2 is located on the top of a light but strong scaffolding, constructed of bamboo and iron, with ladders of bamboo used for access. Its height is 70 feet. The observatory is sheltered by a threefold roof of iron, wood and cloth, in separate layers with airspace between. There is also a very little lattice work on the east side and on the west side. The whole is so designed that there is the greatest possible access of air and only so much shelter that the sun cannot heat nor directly shine upon the thermometer cage. The vertical angle of the sun at noon varies from 36° in winter to 83° in summer. The rays of the rising and the rays of the setting sun make on the 21st of June a horizontal angle of about 12·7°. These angles were considered in the design of the roof and the lattice work.

The strength of the scaffolding is supposed to be sufficient in case of a storm of 60 miles an hour, but not beyond.

3. Before the roof was fixed on the scaffolding, it was set up alongside observatory No. 1 and provided with the cage and thermometers. Comparative observations were then made during 5 days between No. 1 and the temporary roof containing the thermometers of No. 2. From 22nd to 26th, September, 1882, these comparative observations were continued with the following mean result,

	No. 1 observatory, thatched standard pattern shed.	Roof of No. 2 obser- vatory, temporarily set up on the grass plot.
Minimum dry,.....	69·4	69·0
Maximum dry,	87·9	89·2
10 A. M. dry,	83·4	84·5
10 A. M. wet,	74·0	74·1
4 P. M. dry,	85·4	85·6
4 P. M. wet,	74·8	74·4
Daily mean dry,.....	77·4	77·3

The daily means differ very little. No. 2 is only 0.1° cooler than No. 1. The maximum differs slightly. No. 2 maximum is 1.3° higher than No. 1. On the other hand, No. 2 minimum is 0.4° lower than No. 1. The radiation from the ground upon which the sun shone all round the thermometer of No. 2 was no doubt the cause of the higher temperature during the afternoon.

4. The elevated observatory No. 2 is situated in a portion of the Forest Office compound which is planted with fruit trees about 18 feet high and alongside of a solitary large fig tree, the crown of which reaches as high as the observatory, about 70 feet above the ground. At the surface of the ground the trees have some influence. When there is frost outside, there is none immediately underneath the trees. The observatory No. 2 itself is, however, so much elevated that the small fruit trees below cannot well influence it much: it stands also quite free of the large fig tree and I suppose the readings must be nearly the same as if the observatory stood directly over No. 1 on the grass plot. The distance between the two observatories No. 1 and No. 2 is 400 feet.

5. The readings at the two observatories were made every day twice, Sundays excepted. On odd dates No. 1 was observed first and on even dates No. 2 was observed first. This was done to avoid differences arising from the time it took the observer to get from one observatory to the other.

6. The observations were made by Babu Annadaprasad Ray, Mathematical Master of the Forest School. Once during October 1882, Mr. Laurie observed alternatively with the Babu, and it was a source of great inconvenience to have two people observing, one in the morning and one in the evening. Mr. Laurie's other duties sometimes prevented his reading, and at other times he did not pour water into the vessels, so that the Babu found the thermometers dry the next morning. Babu Kalikant Kar observed for a fortnight in February, 1883. When he was prevented, he deputed once a third party to read for him. Once the Mathematical master got a chaprasi to put new cloth on the thermometers of No. 2: the chaprasi did not set the pins and thus the next reading of the wet minimum was lost. Once I found that the Mathematical master had deputed a chaprasi to water the thermometers of No. 2 on Monday morning: the chaprasi did not do what he had been told and readings were lost.

Such were the accidents which came, off and on, to my notice. I had opportunity to check the observations very often. I checked especially minima and maxima by reading them sometimes before they had been observed by the observer and comparing afterwards. I made also repeatedly experimental readings and observations for various other purposes, which served as a check to the records.

7. On the 11th of October, 1882, and on the 16th February, 1883, I observed the temperatures in quick succession at both observatories early before sunrise, continuing till after sunrise. These observations showed me that when the ordinary thermometers were at their lowest points (shortly before sunrise) the minimum thermometers also were at their minimum and the two kinds of minima thus obtained agreed with each other. After these experiments it cannot for a moment be maintained that the remarkable results, especially with regard to the daily dry minima of the two observatories, were owing to bad indications of the minimum thermometers.

8. The following table shows the monthly means of observations at the two observatories and the differences of minimum, maximum and daily mean temperatures at both observatories :

OBSERVATORY No. 1. STANDARD PATTERN SHED.																		
Month, 1882 and 1883.	Minimum in Shade.	Range.	Maximum in Shade.	10 A. M. dry bulb.	4 P. M. dry bulb.	Daily mean dry bulb.	Minimum wet bulb.	10 A. M. wet bulb.	4 P. M. wet bulb.	Minimum Vapour Tension.	10 A. M., Vapour Tension.	4 P. M., Vapour Tension.	Mean Vapour Tension.	Minimum Relative Humidity.	10 A. M., Relative Humidity.	4 P. M., Relative Humidity.	Mean Relative Humidity.	Rainfall, inches.
	Inches	°	°	°	°	°	°	°	°	Inches	Inches	Inches	Inches	%	%	%	%	%
October, ..	57.3	28.5	85.8	78.0	82.1	69.8	54.5	69.0	72.4	.408	.600	.683	.558	87	63	62	71	0.34
November, ..	45.5	31.4	76.9	67.8	72.0	58.8	43.8	64.5	68.2	.268	.570	.652	.497	87	84	83	84	0.15
December, ..	41.1	31.7	72.8	62.8	68.6	54.9	39.6	54.9	59.6	.229	.389	.403	.323	88	59	57	68	0.00
January, ..	40.3	25.3	65.6	56.7	62.4	51.4	38.6	49.2	51.9	.217	.263	.266	.249	86	57	47	63	5.68
February, ..	40.2	28.8	69.0	58.5	66.6	53.4	38.5	49.9	53.6	.217	.258	.257	.244	86	52	39	58	0.00
Mean, ..	44.9	29.1	74.0	64.8	70.3	57.7	43.0	57.5	61.1	.268	.406	.452	.374	87	63	58	69	6.17

OBSERVATORY No. 2. ELEVATED STATION 66 FEET.																			DIFFERENCES BE- TWEEN 1 & 2 STATIONS.		
MONTH, 1882 AND 1883.	Minimum in Shade.	Range.	Maximum in Shade.	10 A. M. dry bulb.	4 P. M. dry bulb.	Daily mean dry bulb.	Minimum wet bulb.	10 A. M. wet bulb.	4 P. M. wet bulb.	Minimum Vapour Tension.	10 A. M. Vapour Tension.	4 P. M. Vapour Tension.	Mean Vapour Tension.	Minimum Relative Humidity.	10 A. M. Relative Humidity.	4 P. M. Relative Humidity.	Mean Relative Humidity.	Rainfall, inches.	Minimum dry.	Maximum dry.	Daily mean.
	°	°	°	°	°	°	°	°	°	In.	In.	In.	In.	%	%	%	%	°	°	°	°
October,	63.1	20.4	83.5	76.3	80.6	71.6	56.2	65.6	66.3	.378	.506	.477	.446	66	56	45	55	0.33	5.8	-2.3	1.8
November,	54.1	20.2	74.3	66.5	71.8	63.0	49.5	56.1	57.7	.290	.325	.305	.307	70	50	39	53	0.13	8.6	-2.6	4.2
December,	50.7	20.6	71.3	62.1	68.1	59.4	46.0	52.5	54.9	.256	.282	.273	.271	69	51	40	53	0.00	9.6	-1.5	4.5
January,	46.7	17.8	64.6	56.1	61.4	54.1	43.6	48.7	50.2	.247	.260	.231	.246	78	57	43	60	5.42	6.4	-1.0	3.0
February,	46.9	21.8	68.7	58.1	64.9	55.9	42.4	49.0	51.8	.219	.241	.229	.229	68	50	37	51	0.00	6.7	-0.3	2.5
Mean,	52.3	20.2	72.5	63.8	69.4	60.8	47.5	54.4	56.2	.278	.323	.303	.300	70	53	41	54	5.88	No. 2. + 7.4	No. 2. - 1.5	No. 2. + 3.2

9. This table will in some measure fulfil the suggestions made by the Meteorological Reporter to the Government of India, pages 169 and 170 of Part II, Indian Meteorologist's Vademecum.

The difference of temperature between 4 feet and 66 feet is considerable. The minimum is, at 66 feet, $7\cdot4^{\circ}$ higher, the maximum, $1\cdot5^{\circ}$ lower, and the daily mean, $3\cdot2^{\circ}$ higher than at 4 feet.

I have taken great trouble to find out a law according to which the great difference of the minimum thermometer changes in different months. Everything failed, even a comparison with the nocturnal radiation ascertained by a minimum thermometer on grass at the Great Trigonometrical Survey.

The vapour tension illustrates minutely the theory given, page 14, para. 15 of the Vademecum, Part II. Near the ground where there is a supply of moisture, the vapour tension rises from morning till evening considerably. At 66 feet, where the vapour is only received by diffusion from below, it rises very little in comparison and diminishes towards evening.

10. I have now to communicate the results of experiments which I made to ascertain the rate at which the changes of temperature progress from the bottom of the scaffolding to the top. For this purpose I fixed a thermometer cage to the scaffolding at 49 feet above the ground. The protection was afforded by the platform of planks, to the lower side of which I screwed the temporary cage. I observed for 12 days personally the dry and wet minimum at all three cages, 4 feet, 49 feet and 66 feet above the ground. After this I shifted the temporary cage lower down by screwing it to the boards of a lower platform. It was here 25 feet above the ground. I observed again for 11 days. Thus I obtained figures to compare the cage at 4 feet in standard pattern thatched shed with the temporary cage at 25 feet and at 49 feet on the scaffolding and the permanent cage 66 feet above the ground also on the scaffolding.

The following shows the actually obtained mean temperatures and the increments reduced from both experiments to one mean standard.

		Mean reading 12 days in February, 1882.		Mean reading 11 days in March, 1882.		Reduced increment one standard.	
		Dry Mini- mum.	Wet Mini- mum.	Dry Mini- mum.	Wet Mini- mum.	Dry Mini- mum.	Wet Mini- mum.
4 feet	...	41·6	39·7	45·0	43·5	0·0	0·0
25 feet	...	....	....	48·1	44·9	3·4	1·7
49 feet	...	47·1	42·1	....	....	5·0	2·2
66 feet	...	48·3	42·2	50·5	46·1	6·1	3·2

The latter rows of figures show that the change of temperature was a gradual one from 4 feet to 66 feet.

11. From this we have two conclusions: First, that the change of temperature observed at 66 feet compared with that observed at 4 feet is principally owing to the difference in height and not to the presence of trees. Secondly, we conclude that the change of temperature effected by an elevation to 66 feet will be exceeded when a still greater elevation will be tried. An elevation to 100 feet will no doubt produce a correspondingly greater change of the minimum temperature, still smaller daily range, still more regular distribution of vapour tension during each day. It would be interesting to find by experiment at what height these extraordinary changes will cease and make room for the ordinary changes which the diminished pressure only accounts for.

MR. BLANFORD remarked that the system of observation described in Dr. Warth's report was the inception of a scheme which had been arranged with the concurrence of Dr. Brandis, for the purpose of ascertaining the effects of forests upon the climate in India. It was intended to establish a system of comparative observations somewhat similar in kind to those which had been carried on for some years by Dr. Ebermeyer in Bavaria, and the results of which were published in his well known work. It consisted in obtaining observations of temperature, humidity, rainfall &c., in the forest and the open, both near the ground and at the elevation of the tree tops. Hitherto at Dehra, only the observatory in the open had been actually established, but it was intended to make similar observations in the forest of the Dun.

The observations as yet on record show that in the winter months the differences of temperature near the ground and at no greater height above it than 70 feet are very considerable, the minimum temperature before sunrise being from 5.8° to 9.6° lower at 4 feet above the ground than at 70 feet; and the maximum from 0.3° to 2.6° higher. The latter difference was less than the former partly owing to convection, *viz.*, the rise of the heated air and the descent of the cooler air above; and it might be noticed that despite this intermingling the temperature decrement with elevation at the hottest time of day averaged 1° Fahr. for 43 feet, whereas 1° in 183 feet is the limit of vertical static equilibrium. Convection must therefore be very active in most months.

Observations similar in general character to those of Dr. Warth had been carried on for nearly 4 years at the Alipore Observatory, the difference of elevation being, however, not so great. The thermometer cages were at 4 feet and 40 feet; both exactly similar in exposure. In their general character, the results of these observations agreed with those of Dr. Warth's; but the complete annual series showed that it was only in

the winter months that any very great difference existed between the minimum at 4 feet and that at 40 feet above the ground; whereas in the case of the maximum diurnal temperature, there was a difference of between 1° and 2° or more throughout the year; showing that, during the heat of the day, convection must take place actively at all times of the year.

The observations at Dehra were as yet scarcely sufficient to allow of a detailed comparison with those of Alipore, but it might be noticed that at Calcutta the difference of the maxima at the two elevations was never so small as it was at Dehra in January and February, whereas the difference of the minima for an equal difference of altitude was never so great. It would seem, therefore, that in the coldest months at Dehra, the nocturnal cooling of the sheet of air resting immediately on the ground was so great that its mean temperature for the 24 hours was 3° or 4° less than that at only 70 feet above the surface. Under such circumstances there could be little or no convection at any time of the day.

3. *On the measurement of solar radiation by means of the black-bulb thermometer in vacuo.*—By S. A. HILL, B. Sc., *Meteor. Reporter to Government, N.-W. Provinces and Oudh.* Communicated by H. F. BLANFORD, F. R. S., *Meteor. Reporter to the Government of India.*

(Abstract.)

This consisted of a discussion of the observations of the sun thermometer *in vacuo* made at the Allahabad Observatory during the years 1876-1882. The same instrument had been used throughout in the same position, and the observations selected for discussion were the same as in the paper recently read before the Society by Mr. Blanford, *viz.*, those of cloudless or but slightly clouded days, the months July to September being omitted. The author pointed out that taking as the fundamental datum the difference of the Solar thermometer reading and that of the maximum shaded thermometer, the values would be affected by, 1st, the thickness of the atmosphere traversed; 2nd, the absorptive power of the transparent atmosphere, which chiefly depends on the water vapour present; 3rd, the haze and dust; 4th, the radiating and reflecting powers of the ground; 5th, the variable difference of the temperature at the time of the maximum insolation and that shown by the shaded maximum thermometer; all of which must be allowed for before any conclusion could be drawn as to the solar radiation intensity. A correction was applied to the monthly means of the original values for the last of these variable factors, and coefficients were then computed by the method of least squares for the first and second, and monthly values being estimated for the haze,

the observations were corrected by the values so obtained, and annual means computed from the corrected monthly means.

The annual values for the years of observation thus arrived at were as follow;—

Year	1876	1877	1878	1879	1880	1881	1882
Corr. rad.	80.05	82.60	82.67	81.23	80.23	79.12	77.11
temp.							

and it was pointed out that the last minimum of sunspots having occurred in 1878, the results indicated a considerable variation of the solar heat concurrently with the sunspot variation, with a maximum at the sunspot minimum.

In reading the paper MR. BLANFORD remarked that the results were very striking and symmetrical, but were diametrically opposed to those which he had arrived at by his own rougher method of investigation published in 1876. They were opposed also to the conclusions to be drawn from Mr. Norman Lockyer's spectroscopic researches, and from the barometric variation which he had described in the Society's Journal and in 'Nature.' This discrepancy must be recognized and left for future investigation since at present it is impossible to attempt any reconciliation. There were some assumptions necessarily made by Mr. Hill as to the constancy of the haze factor, and that to which he had recently drawn attention, *viz.*, the high diffused cloud which contributed to the pallor of the sky was also necessarily omitted. And there might well be other disturbing causes not yet suggested. Meanwhile Mr. Hill's was a very careful and valuable contribution to the evidence, and awaited explanation.

This paper will be published in the Journal, Part II, 1883.

LIBRARY.

The following additions have been made to the Library since the Meeting held in March last.

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—American Chemical Journal, Vol. IV, No. 5, January, 1883.

———. American Journal of Mathematics,—Vol. V, No. 2.
Bombay. Indian Antiquary,—Vol. XII, Parts 141-142, February and March, 1883.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 3-4, 1883.

- Boston. Boston Society of Natural History,—Proceedings, Vol. XX, Part 4; and Vol. XXI, Parts 1-3.
- . ———. Memoirs,—Vol. III, Nos. 4-5.
- Brussels.—Musée Royal d'Histoire Naturelle de Belgique,—Bulletin, Vol. I, No. 3, 1882.
- . Société Malacologique de Belgique,—Annales, Vols. I-XIV and XVI.
- Calcutta. Geological Survey of India,—Records, Vol. XVI, Part 1, 1883.
- . Original Meteorological Observations,—February, 1882.
- Copenhagen. Kongelige Nordiske Oldskrift Selskab,—Aarboger for Nordisk Oldkyndighed og Historie. Parts 1 and 3.
- . ———. Tillæg, 1881.
- Frankfort. Senckenbergische Naturforschende Gesellschaft,—Abhandlungen, Vol. XII, Nos. 3-4.
- . ———. Bericht, 1880-1881.
- Ithaca. The Library of Cornell University,—Vol. I, No. 4, January, 1883.
- Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. III, Nos. 8-12.
- London. Academy,—Nos. 562-565.
- . Athenæum,—Nos. 2885-2888.
- . Institution of Mechanical Engineers,—Proceedings, No. 4, November, 1882.
- . Nature,—Vol. XXVII, Nos. 694-696.
- . Royal Asiatic Society,—Journal, Vol. XV, Part 1, January, 1883.
- . Royal Astronomical Society,—Monthly Notices, Vol. XLIII, No. 2, December, 1882.
- . Royal Geographical Society,—Proceedings, Vol. V, No. 2, February, 1883.
- . Statistical Society,—Journal, Vol. XLV, Part 4, December, 1882.
- Moscow. Société Impériale des Naturalistes,—Bulletin, No. 1, 1882.
- Munich. Repertorium der Physik,—Vol. XIX, Nos. 1-2.
- Paris. Journal Asiatique,—Vol. I, No. 1, January, 1883.
- . Société de Géographie,—Bulletin, Vol. III, No. 4, 1882.
- . ———. Compte Rendu des Séances,—Nos. 21, 1882; 3-4, 1883.
- . ———. List of Members,—31st December, 1882.
- Philadelphia. American Philosophical Society,—Proceedings, Vol. XX, Nos. 110-111.
- Rome. R. Accademia dei Lincei,—Atti, Vol. VII, No. 3, 1883.
- Schaffhausen. Société Entomologique Suisse,—Bulletin, Vol. VI, No. 7.
- St. Petersburg. L'Académie Impériale des Sciences,—Mémoires, Vol. XXX, Nos. 4, 6-8.

Vienna. K. K. Central-Anstalt für Meteorologie und Erdmagnetismus,—Jahrbücher, Vol. XV, 1878; and Vol. XVII, Part 1, 1880.

Washington. Smithsonian Institution,—First Annual Report of the Bureau of Ethnology, 1879-80.

Yokohama. The Chrysanthemum and Phoenix,—Vol. III, No. 1, January, 1883.

BOOKS AND PAMPHLETS,

presented by the Authors and Translators.

BASTIAN, A. Der Buddhismus in seiner Psychologie. 8vo. Berlin, 1882.

BAYLEY, SIR EDWARD CLIVE. Remarks on certain Dates occurring on the coins of the Hindu Kings of Kábul, expressed in the Gupta Era and in Arabic (or Quasi-Arabie) Numerals. With Postscript. 8vo. London, 1882. Pam.

———. On the Genealogy of Modern Numerals. Part II. 8vo. London. Pam.

CHATTOPÁDHYÁYA, NISIKÁNTA. Indische Essays. 8vo. Zurich, 1883. Pam.

———. The Yátrás; or, the popular Dramas of Bengal. 8vo. London, 1882. Pam.

FRYER, LIEUT.-COL. G. E. Note on the Páli Grammarian Kachcháyana. With some remarks by Dr. A. F. Rudolf Hoernle. 8vo. Calcutta, 1882. Pam.

HOWELL, M. S. A Grammar of the Classical Arabic Language, translated and compiled from the works of the most approved or naturalized authors. Vol. I. 8vo. Allahabad, 1883.

ROBINSON, S. Persian Poetry for English Readers: being specimens of six of the greatest classical poets of Persia: Ferdusi, Nizámí, Sádí, Jelál-ud-din Rúmí, Háfiz, and Jámí. With Biographical Notices and Notes. 12mo. Glasgow, 1883.

Recherches Archéologiques dans le Sud de l'Inde. 8vo. Nancy. Pam.

MISCELLANEOUS PRESENTATIONS.

The Indian Forester, Vol. VIII, Nos. 3 and 4, and Supplement; and Vol. IX, Nos. 1-2.

BENGAL GOVERNMENT.

Annual Report of the Commissioner of Agriculture for the year 1880. 8vo. Washington, 1881.

COMMISSIONER OF AGRICULTURE, U. S., AMERICA.

Annual Report of the Comptroller of the Currency to the First Session of the Forty Seventh Congress of the United States. 8vo. Washington, 1881.

COMPTROLLER OF THE CURRENCY, U. S., AMERICA.

Report on the Administration of the N. W. Provinces and Oudh, for the year ending 31st March, 1882. 8vo. Allahabad, 1882.

GOVERNMENT OF N.-W. PROVINCES AND OUDH.

FALLON, S. W. A New English-Hindustani Dictionary, Part 12. 8vo. Benares, 1883.

Indian Antiquary, Vol. XII, Parts 141-142. 4to. Bombay, 1883.

HOME DEPARTMENT.

Report on the Administration of the Madras Presidency, during the year 1881-82. 8vo. Madras, 1882.

MADRAS GOVERNMENT.

Catalogue of Manuscripts and Books belonging to the Bhau Daji Memorial. 8vo. Bombay, 1882.

HON. RAO SAHIB V. NARAYAN MANDLIK, C. S. I.

Monthly Weather Review, November, 1882. 4to. Washington, 1883.

International Meteorological Observations, August, 1881. 4to. Washington, 1882.

METEOR. REPORTER TO THE GOVT. OF INDIA.

St. Xavier's College. Observations, July to December, 1882.

ST. XAVIER'S COLLEGE OBSERVATORY.

PERIODICALS PURCHASED.

Benares. Fallon's New English-Hindustani Dictionary,—Part 12, 1883.

Cassel. Botanisches Centralblatt,—Vols. X-XII; and XIII, Nos. 1-4.

Berlin. Deutsche Litteraturzeitung,—Nos. 1-4, 1883.

Calcutta. Indian Medical Gazette,—Vol. XVIII, No. 4, March, 1883.

Edinburgh. The Edinburgh Review,—Vol. CLVII, No. 321, January, 1883.

Geneva. Archives des Sciences Physiques et Naturelles,—Vol. IX, No. 2, February, 1883.

Göttingen. Gelehrte Anzeigen,—Nos. 3-4, 1882; and 7-10, 1883.

Leipzig. Annalen der Physik und Chemie,—Vol. XVIII, No. 3.

———. Hesperos,—Vol. II, Nos. 40-41.

———. Litterarisches Centralblatt,—Nos. 2-5, 1883.

London. Annals and Magazine of Natural History,—Vol. XI, No. 62, February, 1883.

———. Chemical News,—Vol. XLVII, Nos. 1211-1214.

———. Entomologist,—Vol. XVI, No. 237, February, 1883.

———. Entomologist's Monthly Magazine,—Vol. XIX, No. 225, February, 1883.

———. Ibis,—Vol. VI, Supplement, December, 1882; and Vol. I (5th Ser.), No. 1, January, 1883.

- London. *Journal of Botany*,—Vol. XXI, No. 242, February, 1883.
———. *Journal of Science*,—Vol. V, No. 110, February, 1883.
———. London, Edinburgh, and Dublin *Philosophical Magazine*,—Vol. XV, No. 92, February, 1883.
———. *Nineteenth Century*,—Vol. XIII, No. 72, February, 1883.
———. *Publishers' Circular*,—Vol. XLVI, Nos. 1090-1091.
———. *Society of Arts*,—*Journal*, Vol. XXXI, Nos. 1577-1580.
———. *Quarterly Journal of Microscopical Science*,—Vol. XXIII, No. 89, January, 1883.
———. *Quarterly Review*,—Vol. CLV, No. 309, January, 1883.
———. *Westminster Review*,—Vol. LXIII, No. 125, January, 1883.
Paris. *Annales de Chimie et de Physique*,—Vol. XXVIII, January and February, 1883.
———. *Comptes Rendus*,—Vol. XCVI, Nos. 5-8.
———. *Revue Critique*,—Vol. XIII, No. 6; and Vol. XV, Nos. 6-9.
———. *Revue des deux Mondes*,—Vol. LV, Nos. 3-4, February, 1883.
———. *Revue de Linguistique*,—Vol. VII, No. 1, January, 1883.
———. *Revue Scientifique*,—Vol. XXXI, Nos. 5-8.

BOOKS PURCHASED.

- GODWIN-AUSTEN, LIEUT.-COL. H. H. *Land and Freshwater Mollusca of India*. Supplementary to Messrs. Theobald and Hanley's *Conchologia Indica*. Part III, and Plates. 4to. London, 1883.
SCUDDER, SAMUEL H. *Catalogue of Scientific Serials of all Countries, including the Transactions of Learned Societies in the Natural, Physical and Mathematical Sciences, 1633-1876*. 8vo. Cambridge (Mass.), 1879.
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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR MAY, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd May, at 9.15 p. m.

Dr. D. WALDIE, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the Peabody Academy of Science,—Primitive Industry: or Illustrations of the Handiwork, in Stone, Bone and Clay, of the Native Races of the Northern Atlantic Seaboard of America, by Chas. C. Abbott.

2. From the Authors,—Indo-Scythian Coins, with Hindi Legends, by Edward Thomas; (2) Mathura: a District Memoir; with numerous Illustrations. Third Edition. By F. S. Growse.

3. From the Société Géologique de Belgique,—Adresse aux Chambres Législatives au sujet de la Carte Géologique de la Belgique, par G. Dewalque.

4. From the Trustees, Indian Museum,—Catalogue of Mammalia in the Indian Museum, Calcutta, by John Anderson. Part I (6 copies).

5. From the Bengal Government,—Archæological Survey Reports, Vol. XV.

6. From G. V. Juggarow's Observatory,—Results of Meteorological Observations, 1881.

7. From Babu Prannath Pandit,—Gnāna Dīpika, by Babu Kālī Chandra Lāharī, Part VII.

The Philological Secretary drew the attention of the members present to the copy of Mr. Growse's *Mathurá, a District Memoir*, the presentation of which had been announced that evening. He remarked that it was by far the most valuable of all the District Memoirs which had hitherto been published at the instance of the Government of the North-West Provinces. It fully deserved the appreciation with which it had been received by the public, and which was testified by the fact of its already being issued in a third edition. It was replete with accurate information on every point of interest relating to the District of Mathurá, its inhabitants and principal families, its history, antiquities, religious and social customs, etc. Altogether it deserved attention as a model of what of a District Memoir might be made; and it was to be wished that every Indian District might be provided with a Memoir equally full and trustworthy.

The following gentlemen duly proposed and seconded at the last meeting were ballotted for and elected Ordinary Members :

S. A. Hill, Esq.,

Babu Raj Krishna Mukarji, M. A., B. L.

The following gentlemen are candidates for ballot at the next meeting:—

Sirdár Gurdíál Singh, C. S., Hushyárpur, Panjab, proposed by D. Ibbetson, Esq., C. S., seconded by J. Wilson, Esq., C. S.

Col. A. O. Toker, Officiating Secretary, Board of Examiners, proposed by Dr. A. F. R. Hoernle, seconded by Col. W. F. Prideaux.

The SECRETARY reported that the following gentlemen had intimated their desire to withdraw from the Society :

W. MacGregor, Esq.

J. G. W. Sykes, Esq.

Dr. HOERNLE exhibited a collection of gold and silver coins, mostly of the Durrání Dynasty, sent by Mr. M. L. Dames, C. S., of Derá Ismail Khán, with the following letter:—

"I have the pleasure to despatch to you the coins about which I wrote, of which I enclose a list. Of the Durrání series there are 3 gold and 23 silver coins. Besides these, I have sent 3 gold, 8 silver coins and 1 copper coin, which I think are interesting, and should be glad to have any of them, which you consider sufficiently important, described.

"I leave it entirely to you to arrange for the description of these coins, as I cannot make a complete description of them myself. I have noted on the list what I know about them; and I believe I have ascribed them correctly in most cases.

"The Dera or Deraját mint was situated, I believe, here at Dera Ismáíl Khán. The coins of this mint now sent nearly all belong to a find (a maṭká full of coins) at the village of Díwála close to Dera Ismáíl Khán, made about

7 years ago. I was not here myself at that time, but the coins were sent to me by Mr. E. P. Henderson, C. S., who was then stationed here. The gold Dera coin I obtained at Dera Ghází Khán, and the Modúd coin from a Sarraf here who had bought it from a Povindah merchant, the 'Alá-ud-dín Mahmúd at Karnál, and the copper one I put down to Yalduz at Sirsa.

"The Deraját coins are very roughly executed, but some of the others show a superior style, especially the large double rupee of Zamán Sháh struck at Kábul (No. 11) which I think you will consider a very fine coin."

The following is the list of coins, referred to in Mr. Dames's letter—

Gold Coins.

- | | | |
|----------------|---|---|
| Durrání. | { | <p>1. Gold coin of Dera mint. Apparently of Taimúr Sháh.
 <i>Obverse.</i> Zarb i Dera. Sana 6.
 <i>Reverse.</i> Cannot make out inscription. Date apparently (11)92.</p> <p>2. Au. Herat mint. Taimúr Sháh.
 <i>Ob.</i> Zarb jalús maimanat mánús Hirát (1195?).
 <i>R.</i> A verse apparently not very clear, containing the words 'Khorshed wa mäh' rhyming with 'Taimúr Sháh.'</p> <p>3. Au. Multan mint.
 <i>Ob.</i> Zarb Dáru'l Amán Multán. Sana 14.
 1181
 <i>R.</i> Sikka (Tai)múr Sháh Nizám ba hukm (...) Rasúl (...).</p> |
| Miscellaneous. | { | <p>4. Au. Meshhed mint. Nádir Sháh.
 <i>Ob.</i> ... in centre : Zarb Meshhed.
 <i>R.</i> Inscription with name of Nádir Sháh.</p> <p>5. Au. Mohar. 'Aláuddín Mahmúd Sháh.
 <i>Ob.</i> As-sultánu 'l á'zam 'Aláu'd-dunyáwa'd-dín (...) Abú'l-muzaffar Mahmúd Sháh Khildálláh Khiláfatuho.
 <i>R.</i> (Date on margin). Sikandar's-Sání, yamínul khiláfát, násir Amíru'l-Múminín.</p> <p>6. Au. Modúd Ghaznawí. (Cf. coin of Farakhzád, Brit. Mus. Cat. II. No. 546.)
 <i>Ob.</i> Area : 'adal.
 lá iláhu ilá alláhu wahdah la Sharíkulahu. Saní. (Double margin.)
 <i>R.</i> Lillah-Fath.
 Muhammad Rusúlu'lláhi.
 Al-Qaím b'amru'lláhi Shahábu'd-daulat. Modúd.
 (Single margin).</p> |

Silver Coins.

Durrání.

- 7. Ar. 3 Rupees of Ahmad Sháh, Deraját mint, year 23.
- 8. Ar. Rupee of Taimúr Sháh, Pesháwar mint—'Sana jalús zarb Pesháwar'—in tughra.
- 9. Ar. 2 Rupees of Taimúr Sháh. Deraját mint, one dated 1199, one 11.
- 10. Ar. 1 Rupee similar to 9. Difference in inscription.
- 11. Ar. Double rupee (about 360 grains). Kábul mint. Zamán Sháh.

Ob. Sikka-i har do jahán, riváj-i-daulat, ba nám-i-Sháh Zamán, qarár yáft ba-hukm-i-Khudáe.

Margin.....Zad bar sím wa zar ba hukm-i-Iláhi Zamán.....

Rev. (In tughra.) Zarb Sana Dáru'l Saltanat Kábul.

- 12. Ar. Rupee of Zamán Sháh. Deraját mint, year 8 (out of 3.)
- 13. Ar. 2 Rupees of Zamán Sháh. Ahmadábád mint?
- 14. Ar. 3 Rupees of Mahmúd Sháh (out of 7). Deraját mint. Dates 24, 1226, 1227.
- 15. Ar. 3 Rupees of Mahmúd Sháh (out of 8). Herát mint. Dates 1216, 1223, 1224.
(The other dates are 1220, 1221, 1225.)
- 16. Ar. A rupee of Mahmúd Sháh (Herát) another type.
- 17. Ar. Rupee of Sháh Shujáh ul Mulk. Kábul mint, resembling No. 11 in style.
- 18. Ar. 2 Rupees of Sháh Shujáh ul Mulk (out of 11) Deraját mint. Dates 1216 and 1224.
- 19. Rupee of Taimúr Sháh, Multán mint, 4th year of his reign.

Miscellaneous.

- 20. A rupee without legible name, resembling in style those of Deraját mint.
- 21. A silver coin struck at Isfahán, resembling in style those of the Persian Mongols.
- 22. Five Persian silver coins.
- 23. A silver coin of Bábar, date (9) 36.
- 24. A small silver coin unknown to me.
- 25. A copper coin dated 606 bearing a crescent under the date, probably of Tájuddín Yalduz.

Subsequently the following letter, relating to the above coins, was received from Mr. Dames.

"In continuation of my letter about Durrání and other coins sent to you, I find that the coin of 'Aláu'd-dín Mahmúd Sháh (No. 5 in my list) has already been described by Mr. Delmerick in the Society's Journal for

1876, p. 295, Pl. VI, No. 19. Mine is, I think, identical with the one there described.

"To the list of Durrání coins I should have added some copper coins of Mahmúd Sháh struck at Multán. One of them bears the date 1230 = 1815 A. D. or three years before the Sikhs took the town. I also have a Sikh copper coin of Dár-ul-Amán Multán bearing the date (18) 75 which is the Sambat corresponding to 1818, the date of the capture of Multán. The h. 1230 bears the figure of a lily, and another of Mahmúd's, the Sikh leaf, which looks as if these were struck under Sikh influence.

"Some of the Deraját rupees may have been struck by the Sikhs after 1821 (when they took Dera Ismail Khán). They kept up some sort of mint certainly. Mr. Rodgers gives two Deraját Sikh coins in his paper on the coins of the Sikhs. (Journal, 1881, Nos. 49 and 50, Pl. VIII).

"No. 20 in my list, which bears no king's name, is probably a Sikh coin. One like it which I have not sent seems to bear the date 98, which would be as late as 1841, but I cannot make anything out of the inscriptions except 'Zarb Deraját.'

"I have been looking through the list of Aurangzeb's mints given by Mr. Rodgers in the Proceedings for January, and I find I have rupees of three mints not given by him, *viz.*, Illáhábád, Champánir and Katak. The Katak one is of the 46th julús, the others undated."

DR. HOERNLE remarked that the coins were of much interest and deserved careful examination and description. He had referred Mr. Dames's letters to General Cunningham, who in his reply had advised the publication of these coins, as they were to a great extent unknown as yet. Accordingly it was intended to publish descriptions and illustrations of as many of them as on examination would be found deserving of it.

The following note was read from Mr. F. S. Growse on the word "nuthār" or "niṣār."

"In the Society's Proceedings for January, which have just reached me, I see some discussion about the word *nuthār*, or more correctly *niṣār*, meaning money or other articles thrown amongst the people at marriages, or other festive occasions, by way of largesse. The Hindí word for the same custom is *nichhāvāri*, which occurs scores of times in Tulsí Dás's *Rámáyana*; as in the line

"*Nán, Bári, Bhát, Naṭ Rám-nichhāvāri pái* (I. 326). 'The barbers, torch-makers, singers and dancers picked up the offerings that had been scattered about Ráma.'

"Or again,

"*Karahiṃ nichhāvāri manigan chirá*, (I. 352). 'They scatter around him jewels and vestments.'

"The resemblance between the Arabic *niṣār* and the Hindí *nichhāvāri* is so close that the one might easily be a corruption of the other. But it seems improbable that such a thoroughly Indian custom should not have an indigenous name; and, further, the derivation of *nichhāvāri* would appear to be from the Sanskrit root *kship*, 'to throw,' with the prefix *ni*, 'down.' I see that Mr. Bate in his Hindí Dictionary forms it from *niyam* + *kshay* + *var*: but this can scarcely be accepted as a very plausible explanation. Anyhow the word does not look like a foreign importation. As to the etymology of *niṣār*, I must leave Arabic scholars to speak; if there is no connection between the two words, the coincidence in sound and meaning is at least curious. Should there be no earlier authority than Tulsí Dás for the use of *nichhāvāri*, it *might* be a mere adaptation of the sound, such as has converted *intikal* into *ant kál*, *bil iymál* into *bríj mál*, and has helped to popularize many other unintelligible terms of legal phraseology."

The following papers were read :—

1. *Notes on the Nángis : a Religious Sect.*—By J. W. PARRY, Assoc. M. Inst. C. E.

These notes were compiled by the author while at Bhiwani on the Rewari-Ferozpur Railway. They are from two sources: (1) Written records in the Bhiwani Tahsil by one Amir Chand, a Deputy Collector, made about 11 years ago; (2) From notes made in conversation with Ramchandra the present head of the Nángis at Bhiwani. It is assumed that the present year 1883 corresponds with the Hindu Sambat 1937.

Amir Chand's Records.

In Magh Sambat 1828, corresponding to our January, 1774, Dedráj, the founder of the sect, was born in the house of Puran Brahman in the village of Dharsu, State Narnoul or Patiala. For the first 5 or 6 years Dedráj fed cattle, but a Mussalmán having killed a cow, Dedráj left off feeding cattle and took to cultivating. At 11 years of age he went to Agra to the house of Diwan Dharm Dass and was appointed cook. Here Nángi, Dharm Dass's bhisti, became acquainted with him; she used to give him patása, a native sweetmeat, and became devoted to his person. Subsequently Dedráj returned to his native village Dhursu with Nángi, where the Mussalmáns complained to the Nawab of Jhujjur that Dedráj was a Jádúgar or conjuror. He was imprisoned for two years: when released he came to Míhrampur, district Narnoul, Sambat 1870, or 1816 A. D. He then went to Churina, district Khetvi, where in Sambat 1892, A. D. 1839, he built a temple and practised bhajan, gáná bajáná or worship with songs and music. The report of his practices having spread, many men flocked to hear him, especially Phúlu Bábar, Kaula, Dhaná Jhábar—called the Pan-

dars—with Bábar's wife called Daropti. They succeeded in bringing Dedráj to Bhiwani where he also preached, but accusations were made against him, and he retired to Metathul, where Nángi died. Then he obtained another Nángi, a Brahmini inhabitant of Laráen, district Jhujjur, who is said to be still alive at Churina.

After many vicissitudes Dedráj died at Churina in Magh 1909 at the age of 81 years, A. D. 1855.

Ramchandra's Account.

Dedráj Brahmin was son of Puran and was born at Dharsu. Up to the age of 12 he fed cattle. He also sowed kusum or safflower for dyeing clothes: part of the produce he sold as a means of subsistence and a part he gave away in charity. A Mussalman having killed a cow, Dedráj went to Agra and began to cook at the house of Dharm Dass Dewan. Dharm Dass noticed that Dedráj used not to eat anything and insisted upon his partaking of food: Dedráj then began to do so.

Shortly afterwards Dharm Dass sent Dedráj to Calcutta on business with a large consignment. *En route* at Allahabad, the boat struck on shore, and could not be moved, but Gangaji showed herself at night and cleared the boat. At Calcutta, several of the crew were imprisoned, and much of the property was confiscated, but Dedráj succeeded in obtaining the release of property and crew. On his return he became acquainted with Nángi, Baniani, an inhabitant of Narnoul "jo bad chaluí thí"—who was a bad character. He begged her to give up her wickedness. She replied "Main dil se lachár hún, is ko tum rok do nahinto achchhi nahin hogí," "I am helpless: you stop it, otherwise it will not fare well with me."

Dedráj then advised her to throw off all her clothes and clothe herself in plantain leaves: she did so and eventually succeeded in giving up her wickedness also. Dedráj and Nángi then left Dharm Dass without taking anything with them, though Dharm Dass made profuse offers, and arrived at Narnoul. On the road, he asked a villager for water: the request was at first refused and then granted, so God rained much water in that village. At Narnoul, Dedráj put up for some years at the house of Chaitráam Jat. Dhánahs, Chumars, etc., began to flock to him, and he preached to them to leave off kám, krodh, moh, lobh, or adultery, anger, affection, and avarice. Dedráj and Nángi then journeyed to Dhursu, but Dedráj's mother refused him admission to her house as she considered he had degraded himself. He then went on to Ghali where he also preached. Here Nanisúk, goldsmith, lived, who, being converted, gave his wife Chanadna to Dedráj as a present. But Chanadna's brothers maltreated Dedráj, bruising him with sticks and stones. The pupils of Dedráj began to diminish, because they thought he could not defend himself, but eventually harmony was restored

when Dedráj promised not to complain at the Tahsil. He then returned to Dharsu where the zemindars sent up a complaint to the Nawab of Jhujjur that Dedráj was a conjuror and made their wives dance. He was put into prison, but the prisoners being intoxicated with 'prem' (love) began to dance. Six months afterwards Dedráj was released: he asked the Nawab why he had been confined, and the Nawab said because there seemed to be just complaints against him.

"But" said the Nawab "tell me truly can you conjure."

"Certainly I have the power."

"Show it" said the Nawab.

"Before doing so" replied Dedráj "answer me one question. How many ladies are there in your harem?"

"Six."

"Then" said he "eat 10 pairs of shoes for each lady, or 60 pairs altogether, remain patient always in your mind, and afterwards come to me and I will show you my jádu."

The Nawab was very angry and ordered him out of his territory with strict injunctions never to return or else he would pay the penalty.

Dedráj Maharáj then turned his steps to village Churina, district Khetri, and having built a house began to live. News soon spread: then from Bhiwani there came Bábar Singh, Kaula, Phúlu, Jhábar Dhana and Bábar's wife Daropti. Besides these there were many others, amongst whom were Prabhu Lal of the police and Gangaram the father of the present Ramchandra.

All these people were convinced that Dedráj spoke the truth and the Rajputs began to be converted. In Sambat 1905, Dedráj Maharáj came to Bhiwani where Prabhu Lal spoke well of him at the thanah, and gave him a tokua of brass, a carpet and a kariya for cooking sweetmeats. On leaving Bhiwani, Dedráj travelled to Metathul, 4 kos north, to Kunger, district Hansi, to Pilani, district Jeypur, and the greater part of Bikaneer. In all these places he was fêted, collected worshippers and instructed in the doctrines. He then returned to Churina, and died in Sambat 1909.

Nángi, the Baniani, had previously died, but he obtained another Nángi, a Brahmini inhabitant of Laráen, district Jhujjur, who was well acquainted with all the forms and ceremonies, and hence the sect is called Nángi's Panth.

Criticism.

It will be noticed that the two narratives are similar in almost every respect, but there are more dates in the former and more miracles in the latter. The chief discrepancy seems to be in the length of incarceration suffered by Dedráj at Jhujjur, being two years in the first case and only six months in the second, but as this latter is only a verbal narrative, this is of slight importance.

The points most worthy of consideration seem to be that there were two Nángis, one a Baniani and the other a Bráhmīni, and that Churina is the head quarters of the Panth, corresponding to Mecca of the Mussalmans or Jerusalem of Christians.

Their Tenets.

The Nángis are Monotheists or Unitarians; their chief dogma is to abstain from kám, krodh, moh, lobh or adultery, anger, affection, and avarice. They state that by singing and fixing the attention on the Deity a state of prem, or love, and wajd, or ecstasy, is obtained which cannot be reached in any other manner. They also hope in course of time to regenerate the world. They have no caste and the women are not in purdah.

Their Worship.

The men and women sit on their haunches on the floor of the apartment in which the worship takes place, the men on the right of Ramchandra and the women on the left—though it seems that this is not imperative, and the sexes may be mixed. In imitation of the patása given by Nángi to Dedráj, sweetmeats are handed round, which some evil-minded individuals state are drugged.

Each man and each woman, as he or she enters, is provided with a pair of small cymbals. Each cymbal is fastened by strings at the back to the thumb; these cymbals can then be worked by combined action of wrist and arm. The principal performers have drums and harps. Many of the hymns have very pretty airs, *e. g.*, "Jhagra bhari ho daiya", and several of the women have very clear soprano voices which if properly trained would have a good compass. Each member of the company while singing keeps his (or her) body in a constant state of motion, shaking his head the while in unison with the hymn. Gradually the pagris of the men and the sáris of the women fall off—the religious fervour is now rising. As the 'prem' or love and 'wajd' or ecstasy mounts, two or three of the men who have immensely long hair stand up and shake their hair in all directions. Meanwhile the music has been getting louder and louder till it swells like an anthem with a full choir. The assembly then presents a most animating and thrilling scene. This vociferation is continued until sheer exhaustion requires a cessation. It will then be noticed that the perspiration stands like beads on the foreheads of each member—even on a cold December's night. It is stated that under excess of prem or wajd, the couples get up and dance madly about, or roll on the floor in agonies of terror; but it is universally acknowledged that the bounds of decency are never exceeded.

The paper concluded with several hymns of the Nángis, in the vernacular, with an English translation.

2. *Memorandum on the Superstitions connected with birth, and precautions taken and rites performed on the occasion of the birth of a child among the Jats of Hushyárpur, in the Panjáb.*—By SIRDÁR GURDÍÁL SINGH, C. S. Communicated by D. IBBETSON, C. S.

(Abstract.)

In this paper the author gives an account of various rites and ceremonies which a woman of the tribe of Jats considers necessary to be performed for the safety or happiness of her child both before and after its birth. If abortion has ever occurred, or if there is any fear of its occurring, she is obliged to carry about with her either a piece of wood taken from a scaffold on which some convict has been hanged, or a piece which has been thrown over the coffin of an old man or woman, or a piece of tiger's flesh, or a tiger's claw. The ceremonies performed on the birth of a child are described at some length, and the precautions taken to ensure a woman from all kinds of bad luck and from the malice of witches during her confinement are also mentioned. She must keep a fire constantly burning in her room; grain, an emblem of good luck, has to be kept near the bed; water, being the purifier, should also be in the room as witches are believed to attack the unclean. For the same reason there should be no drain in the house as witches would enter through it, a drain being in the very nature of things unclean. As witches are said to take the disguise of cats, no cat is allowed in the house, and the most unlucky dream the woman could have is that in which a cat appears. The house should not be swept as this might have the effect of sweeping all the luck out of it.

The author then refers to the belief this people have in the influence of the evil eye and mentions the measures they adopt to counteract its effect, especially in the case of children. If a baby refuses to take its nourishment, the first thought of the mother is that it is under the influence of the evil eye and various tests are described which are used to discover whether this surmise is correct. The next step the mother takes when her suspicions are confirmed is to discover who the person was whose eye fell on the child, and she generally suspects the person who looked at the child longest and who praised him the most. Hence friendly visitors make it a rule not to praise a child much. When next the suspected visitor calls, the child is hidden from his eye, and some earth from under his footsteps is quietly taken and thrown into the fire. If the person with the evil eye cannot be discovered, recourse is had to the "cunning man" (*syána*) who generally gives some charmed water, with which the baby and the mother are to be washed, or anything else he may think fit to administer.

In conclusion, the author remarks:—"As to the extent to which such beliefs prevail, there are very few men who really believe in them, but there are very few women who do not believe in such things, as all

such things are managed by women, and in most cases men do not come even to know of them. It will appear that on the one hand some of these superstitious beliefs are the relics of old faiths and manners which have in some instances been incorporated in the modern religions, and on the other hand they are the absurd beliefs of an ignorant and credulous people. It is also manifest that the modern religions discard such superstitions: yet all religions prevalent in the Punjáb, Hinduism, Sikhism, and Muhammadanism, have failed to eradicate them and it must be so until women are also educated, and brought up like men. Truly every candid native must confess that in India women have their own superstitious religion, which does not practically differ much whether they be nominally Hindus, Muhammadans or Sikhs."

This paper will be published in the Journal, Part I, 1883.

3. *A visit to Kafiristan.*—By REV. T. P. HUGHES, B. D.

(Abstract.)

This paper consists of the diary of a Pathan Christian Evangelist who visited Kafiristan in 1882, together with notes on the habits, &c., of the Kafirs by the Rev. T. P. Hughes. These notes and the diary appeared originally in the "Civil and Military Gazette." No European has as yet been able to penetrate into Kafiristan and the country is therefore to a great extent unknown, the little that is known having been obtained from the verbal narratives of Muslim and Kafir travellers. The people appear anxious that Europeans should visit them and have given every assurance that they would treat them hospitably. The Peshawar Missionaries have received three distinct invitations to visit the country. The people appear to be ignorant, superstitious and immoral, and their idolatrous customs have been made social institutions, but they express great anxiety to be instructed, and the existence of a Muhammadan village three miles from Kamdesh proves that they are not bigoted. They have no special name for their country and call themselves Kafirs, or Infidels, a name given them by the Muhammadans, and their country Kafir-gul, *i. e.*, the Kafir country. Theft appears to be almost unknown among them and they are more truthful than the people of India. The punishment for murder (which is not common) is expulsion from the tribe. Domestic slavery has existed in Kafiristan for many centuries, and every family of respectability possesses slaves. The men slaves appear to remain in the same family, but the female slaves are sold like cattle. An extensive slave trade is carried on with the surrounding Muhammadan tribes.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR JUNE, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th June, at 9-15 P. M.

Dr. D. WALDIE, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From Dr. Rájendralála Mitra, C. I. E.,—(1) Baidyanatha Mahatmya (MS.) ; (2) Rubbing of an inscription from a temple in the garden of the Mahant adjoining his matha, Buddha Gaya.
2. From the Trustees of the Indian Museum,—Catalogue and Handbook of the Archæological Collections in the Indian Museum, Part I, by Dr. J. Anderson. (6 copies.)
3. From the Author,—Index Verborum to the Published Text of the Atharva-Veda, by William Dwight Whitney. (Large paper edition).
4. From the Secretary of State for India,—A Catalogue of the Chinese Translation of the Buddhist Tripitaka, by Bunyiu Nanjio.
5. From the K. b. Akademie der Wissenschaften, München,—Churfürst Maximilian I. von Bayern, by Felix Stieve.
6. From the K. Instituut voor de Taal-, Land- en Volkenkunde van Nederlandsch-Indie,—Reis in Oost- en Zuid-Borneo, by Carl Bock.
7. From the Home Department,—(1) Selections from the Records of the Government of India, Home Department, No. 191 ; (2) Manual of Jurisprudence for Forest Officers, by B. H. Baden-Powell.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :

Sirdár Gurdíál Singh, C. S.

Colonel A. C. Toker.

The following gentleman is a candidate for election at the next meeting :

Kumar Isvariprasad Garga, zemindar of Maisadal, proposed by Babu G. D. Bysack, seconded by Dr. H. W. M'Cann.

The following gentlemen have intimated their desire to withdraw from the Society :

G. Nevill, Esq.

G. L. Molesworth, Esq.

H. H. Nawab Siddeek Hassan, Khan Bahadur.

The COUNCIL reported that Babu P. N. Bose, B. Sc., F. G. S., had been elected Member of Council and Natural History Secretary, subject to the approval of the meeting.

The election was confirmed.

The COUNCIL reported that Mr. E. S. Andrews and Babu Mohendra Chunder Mukerji had resigned their posts of Assistant Librarian and Copyist respectively, and that Mr. A. S. Tiery and Babu Amrita Lal Das had been appointed to these posts, subject to the confirmation of the meeting.

The appointments were confirmed.

The SECRETARY read the following letter from H. E. Count Melchior de Lonyay, President of the Hungarian Academy of Sciences, thanking the Council for having presented the Academy with three original letters of Csoma de Körös, the famous Hungarian scholar and traveller. These letters had been presented to the Hungarian Academy at the suggestion of Dr. T. Duka :

"I beg to acknowledge the receipt of your letter, dated Calcutta, March 6th, including the three original letters of Csoma de Körös which the Council of the Asiatic Society of Bengal was kind enough to present to the Hungarian Academy of Sciences, over which I have the honour to preside.

"It was a happy idea on the part of Dr. Duka, our fellow-member, to suggest the presentation of these letters, and the willingness with which the Council of your Society has effected this desire of our learned fellow has most agreeably surprised us. It is with the most sincerely felt gratitude that we accept these highly valued memorials of our great countryman, and the gift, so complimentary to the donors, will not only be a treasure to the archives of our Academy, but it will be guarded like a national relic, as a test of piety and veneration, felt by every Hungarian for Csoma de Körös, whose wonderful achievements in Science have become legendary amongst us.

"I beg leave to ask you, Dear Sir, to present the thanks of the Hungarian Academy to the Council of the Asiatic Society of Bengal, to that

learned Corporation which half a century ago has so nobly and so generously supported our great countryman in his investigations, and which by the present act of generosity has greatly enhanced the esteem felt by every Magyar towards the representative of British learning and genius in the distant East."

The following letters were read from Mr. W. T. Blanford and Prof. W. D. Whitney thanking the Society for having elected them Honorary Members.

Mr. Blanford says :—

"I have only recently received your letter of the 19th February informing me that the Asiatic Society of Bengal had done me the honour of electing me an Honorary Member. My absence from England caused delay in the receipt of your letter and has prevented my acknowledging it sooner.

"May I request that you will convey to the Council and to the Society my most hearty thanks for the honour they have conferred upon me, and assure them that I continue to take as warm an interest in the prosperity of the Society as I have done for many years past."

Professor Whitney writes :—

"Your favour of February 27th, notifying me of my election as Honorary Member of the Society which you represent, is duly received ; and I beg you to return on my behalf my best thanks for this distinguished mark of the Society's confidence, to which I attach the highest importance, and which I shall feel as an additional incitement to effort in furtherance of the branches of knowledge to which it devotes itself.

"I shall do myself the honour to send by mail for the Society's Library a copy of my *Atharva-Veda-Index-Verborum* on large paper (you have the ordinary edition already, in the *Journal Am. Or. Socy.*), and will have also a copy of my *Sanskrit Grammar* forwarded by the publishers."

The COUNCIL reported that on the recommendation of the Philological Committee the publication of the following works in the *Bibliotheca Indica* had been sanctioned :

1. *S'ankháya S'rauta S'utra*, to be edited by Dr. A. Hillebrandt.
2. *S'aunaka's Sarvánukramanī* of the *Ṛig-Veda*, to be edited by Dr. R. L. Mitra.
3. *Tattva Chintamani* with the Commentary of Mathurá Nátha, to be edited by Pandit Kámákhyánátha Tarkaratna.
4. Selections from various old Commentaries on *Manu*, to be edited by Prof. J. Jolly.
5. *Brahmagupta's Karaṇagrantha*, the so-called *Khaṇḍa-Khāḍya*, to be edited, with a translation and notes, by Dr. G. THIBAUT.

Dr. A. F. R. HOERNLE read the following extracts of a letter from Mr. V. A. Smith stating that he was compiling a detailed and classified Catalogue of the Gold Coins of the Imperial Gupta Dynasty, and that he would be glad of any fresh information any member might be able to give him on the subject :

"The title of my paper will probably be '*A Detailed and Classified Catalogue of the Gold Coins of the Imperial Gupta Dynasty, with an Introduction.*'"

"The materials hardly exist for a comprehensive study of the coins of the Guptas of the Apsar inscription, and the other debased types, but I have noticed them briefly in a Supplement. My Catalogue and Supplement deal with about 250 specimens, *viz.*, all the published coins, and the collections of the British Museum, India Office, Sir E. C. Bayley, Mr. A. Grant, Mr. W. Theobald, and the Asiatic Society of Bengal. In the Introduction I propose to discuss the types, symbolism, the so-called monograms, weights, find-spots, and comparative rarity of the coins. It may perhaps interest you to know that an investigation of the weights seems to show that the authentic Gupta coins follow three distinct standards, *viz.*, Ghaṭot Kacha, Chandragupta II, about 125 grains (*aurei*), excepting the wheel variety of archer type of Ch. G. II; Kumāra, 130 grains and Skanda and wheel variety of Ch. G. II, 134-5 grains.

"The later coins, as of Narā, follow a standard of about 146 grains, *i. e.*, the *suvarṇa*.

"If you think that a paragraph in the Proceedings would be likely to elicit fresh information I have no objection to your stating what I am trying to do. I do not profess to be a numismatist, but I have devoted much time and labour to this set of coins and think I can give a tolerably complete account of what is known of them, leaving it for others to fill up *lacunæ*."

The catalogue will be accompanied by four plates, three of coins and one of monograms.

Dr. A. F. R. HOERNLE read a Note from Mr. H. Rivett-Carnac, C. S., C. I. E., F. S. A., &c., &c., forwarding a Memorandum on the Cromlech of Er-Lannig in the Gulf of Morbihan, Brittany, France, by the Comte de Limur, (with Photographs and Specimens).

Mr. Rivett-Carnac writes :

"Considering it of importance that the stone implements found by Mr. J. Cockburn and myself in the North-West Provinces of India should be compared with the types of implements found in various parts of Europe, specimens were sent to the chief Museums, and to many gentlemen interested in antiquarian research in Great Britain and the Continent of Europe. I have received and am still receiving interesting letters from my correspondents on the subject.

"By a recent mail the Comte de Limur, the distinguished antiquarian, whose private Museum of Antiquities in the Hotel de Limur near Vannes, Morbihan, is well known, has been good enough to send me specimens of remains dug from prehistoric tumuli of Brittany by himself on the 10th of March last, which are described in the accompanying Memorandum. The relics are, I think, of great interest as resembling the Indian finds, and I submit them to the Society with a request that after exhibition they may be presented to the Indian Museum, Calcutta.

"I need not refer to the circumstances under which the implements were found as they are described in the Memorandum. But I may remark on the striking resemblance they bear to the Indian finds. Writing on the 9th April, the Comte de Limur says, 'I have been struck with the extraordinary similarity existing between the celts you have so kindly sent me and our own types. Had I not put marks on them it would have been impossible to distinguish yours from those in my collection here.'"

In the Memorandum forwarded by the Comte de Limur, after remarking on the great number and gigantic size of the Megalithic remains in the department of Morbihan, he proceeds to describe the antiquarian remains on the Island of Er-Lannig in the Gulf of Morbihan, consisting of two Cromlechs, one of which is only partially visible at the very lowest tides. The soil within the circle of the Cromlechs is full of all sorts of relics, mostly fragments of pottery. These remains are very little known, as, owing to the dangerous currents and rocks surrounding the island, it is only possible to land on it for a few moments at high or low water. For this reason specimens from the Cromlechs of Er-Lannig are rarely met with. The only collections known to the Comte de Limur are one of Dr. de Closmadene, one presented to the Museum of St. Germain in St. Germain en Lange by Dr. de Closmadene, one presented by the Comte de Limur and Mr. Cusse to the "*Société Polymathique de Morbihan*," the Count's own collection, and this which he now presents to Mr. Rivett-Carnac. The following is a list of the articles presented :

- No. 1. Thick pottery not turned on the wheel.
- No. 2. The same, but not so thick.
- No. 3. Ditto.
- No. 4. Edge border of a vase.—fired pottery.
- No. 5. Arrow-head. Flint (silex).
- No. 6. Scraper, delicately chipped.
- No. 7. Fragment of flint-knife (burnt).
- No. 8. Arrow head.
- No. 9. Drill.
- No. 10. Another kind of drill,

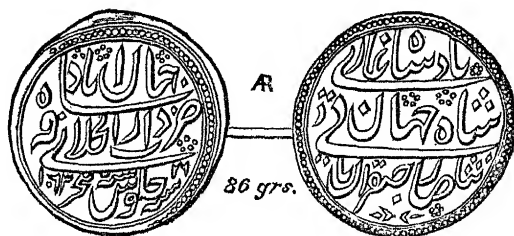
- No. 11. Chips or flakes.
- No. 12. Burnt flake.
- No. 13. Arrow-head, burnt and charred.
- No. 14. Scraper, burnt.
- No. 15. Charcoal.
- No. 16. Piece of pottery with a design.

A curious fact in connection with these fragments is that most of the flints bear traces of a fierce fire to which they were evidently subjected after they had been chipped. Many are cracked and splintered.

The Memorandum was illustrated by photographs of antiquarian remains in Morbihan, and a map of the Isle of Er-Lannig.

In accordance with Mr. Rivett-Carnac's wishes, these specimens will be made over to the Indian Museum.

Dr. A. F. R. HOERNLE read the following note by Mr. C. J. Rodgers on a *nişár* of Shah Jahan in the Delhi Museum :



"This *nişár* is a remarkable coin. One of the *nişárs* of Jahangír drawn is apparently one-eighth of a rupee in weight. One of those of Aurangzeb is also of the same weight, and one a sixteenth. But this one is a half-rupee in weight, weighing as it does 86 grains. I discovered it in the Dehli Museum Collection in the latter part of 1880. It was in the strong box wrapped up in a small bit of paper along with some other coins. All the coins in the Dehli museum are kept in this same strong box. We can judge of the amount of interest shown in the coins of this collection from the fact that for two whole years no one had ever asked to see them. No one knows of their existence. They are not visible to ordinary visitors. To all intents and purposes the collection would be just as useful were it away from Dehli. There is no catalogue of the coins. The whole of our Museums need to be worked up and to be converted into institutions from which instruction and pleasure may be derived by their supporters, the public.

"I am indebted for permission to draw and weigh this coin to the kind offices of J. D. Tremlett, M. A., Commissioner of Dehli, a numismatist and archæologist of no mean order."

Dr. A. F. R. HOERNLE exhibited a clay seal, forwarded by Mr. Rivett-Carnac, C. S., C. I. E., F. S. A. It bears some indistinct marks, some of which have the appearance of letters, which, however, cannot be read.

LIBRARY.

The following additions have been made to the Library since the Meeting held in April last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—American Journal of Philology, Vol. III, No. 12, and Supplement.

————. ———. American Chemical Journal,—Vol. IV, No. 6; Vol. V, No. 1.

————. ———. American Journal of Mathematics,—Vol. V, No. 3.

————. ———. Circulars,—Vol. II, No. 21.

Bombay. Indian Antiquary,—Vol. XII, Parts 143-145, April to June, 1883.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 5-8.

Calcutta. Agricultural and Horticultural Society of India,—Journal, Vol. VII, Part I, New Series.

————. Geological Survey of India,—Memoirs, Palæontologia Indica, Ser. X, Vol. II, Part 4.

Chicago. The American Antiquarian and Oriental Journal,—Vol. V, Nos. 1-2.

Florence. Archivio per l'Antropologia e la Etnologia,—Vols. XI, Fasc. 1-2; XII, Fasc. 3.

The Hague. Koninklijk Taal-, Land-, en Volkenkunde van Nederlandsch-Indië,—Bijdragen, Vol. V, Nos. 1-3; Vol. VI, Nos. 1-2.

Ithaca. The Library of Cornell University,—Vol. I, No. 5.

Königsberg. Schriften der Physikalisch-Oekonomischen Gesellschaft,—Vol. XXI, Part 1; and Vol. XXII, Parts 1-2.

Lahore. Anjuman-i-Panjab,—Journal (English Section), Vol. III, Nos. 13-21.

Leipzig. Deutsche morgenländische Gesellschaft,—Zeitschrift, Vol. XXXVII, Nos. 3-4.

London. Academy,—Nos. 566-575.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XII, No. 3, February, 1883.

———. Athenæum, Nos. 2889-2898.

———. Institution of Mechanical Engineers,—Proceedings, No. 1, 1883.

———. Nature,—Vol. XXVII, Nos. 698-706.

———. Quarterly Journal of the Geological Society,—Vol. XXXIX, Part 1, No. 153, February, 1883.

———. Royal Astronomical Society,—Monthly Notices, Vol. XLIII, Nos. 3-5.

———. Royal Geographical Society,—Proceedings, Vol. V, Nos. 3-4, March and April, 1883.

———. Royal Microscopical Society,—Journal, Vol. III (Series II), Part 1, February 1883.

———. Royal Society,—Proceedings, Vol. XXXIV, Nos. 222-223.

———. Philosophical Transactions,—Part II, 1829; and Vol. CLXXIII, Part 2, 1882.

———. List of Members, 30th November, 1882.

———. Society of Telegraph Engineers,—Journal, Vol. XI, Nos. 45-46.

———. Statistical Society,—Journal, Vol. XLVI, Part 1.

Munich. Akademie der Wissenschaften,—Abhandlungen, Philos.-Philol. Classe, Vol. XVI, No. 3.

———. Historische Classe,—Vol. XVI. No. 2.

———. Sitzungsberichte,—Mathematisch-Physikalische Classe, Nos. 3-4, 1882.

———. Philos.-Philol.-Historisch Classe,—Vol. I, Nos. 1-3; Vol. II, Nos. 1-2, 1882.

Paris. Société Asiatique,—Journal, Vol. XX, No. 2.

———. Société d'Anthropologie,—Bulletin, Vol. V, No. 4; Vol. VI, No. 1.

———. Société de Géographie,—Compte Rendu des Séances, Nos. 5-8.

Pisa. Società Toscana di Scienze Naturali,—Atti, Vol. V, Fasc. 1.

Rome. R. Accademia dei Lincei,—Atti, Vol. VII, Nos. 4-8.

———. Società degli Spettroscopisti Italiani,—Memorie, Vol. XI, No. 12, December, 1882; and Vol. XII, Nos. 1-3, January to March, 1883.

Simla. United Service Institution of India,—Journal, Vol. XII, No. 54.

St. Petersburg. Académie Impériale des Sciences,—Bulletin, Vol. XXVIII, No. 2.

———. Mémoires,—Vol. XXX, No. 11.

- St. Petersburg. Acta Horti Petropolitani,—Vol. VIII, No. 1.
 Turin. R. Accademia delle Scienze,—Atti, Vol. XVIII, Nos. 1-3.
 Vienna. Akademie der Wissenschaften,—Almanach, 1882.
 ———. ———. Archiv für österreichische Geschichte,—Vol. LXIV,
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 ———. ———. Sitzungsberichte,—Philosophisch-Historische Classe,
 Vol. C, Nos. 1-2; Vol. CI, No. 1.
 ———. ———. Mathematisch-Naturwissen. Classe,—Part I,
 Vol. LXXXV, Nos. 1-5: Part II, Vol. LXXXV, Nos. 3-5: Vol.
 LXXXVI, No. 1: Part III, Vol. LXXXV, Nos. 1-5, Vol. LXXXVI,
 Nos. 1-2.
 ———. ———. Register, Vols. 81 to 85.
 Washington. U. S. Coast and Geodetic Survey,—Methods and Results, Ap-
 pendix to Report for 1880, Nos. 18-19.
 Yokohama. The Chrysanthemum and Phoenix,—Vol. III, Nos. 2-3, Febru-
 ary and March, 1883.
 Zagreb. Arkeologickoga Druzstva,—Viestnik, Vol. V, No. 2.

BOOKS AND PAMPHLETS,

presented by the Authors, Translators, &c.

- GROWSE, F. S. Mathura: a District Memoir; with numerous illustrations. 3rd Edition. 4to. Allahabad, 1883.
 ROY, PROTAP CHUNDRA. The Mahābhārata, translated into English Prose. Part I. 8vo. Calcutta, 1883.
 THOMAS, EDWARD. Indo-Scythian Coins, with Hindu Legends. 16mo. Bombay. Pam.
 WHITNEY, W. D. Index Verborum to the Published Text of the Atharva Veda. (Vol. XII, of the Journal of the American Oriental Society). 4to. New Haven, 1881. (Large-paper Edition.)

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- Report of the Calcutta Court of Small Causes for the year 1882. Fep. Calcutta, 1883.
 Report on Municipal Taxation and Expenditure in the Lower Provinces of Bengal for the year 1881-82. Fep. Calcutta, 1883.
 Report of the Alipore Reformatory School, 1882. Fep. Calcutta, 1883.
 Indian Forester, Vol. IX, No. 4.
 Archæological Survey Reports. Vol. XV. 8vo. Calcutta, 1882.
 Annual Report on the Insane Asylums in Bengal for the year 1882. Fep. Calcutta, 1883.

BENGAL GOVERNMENT.

- Report on the Judicial Administration (Civil) of the Central Provinces for the year 1882. Fep. Nagpur, 1883.

Report on the Judicial Administration (Criminal) of the Central Provinces for the year 1882. Fep. Nagpur, 1883.

Census of the Central Provinces, 1881. Fep. Bombay, 1882-83.

Report on the Nagpur School of Medicine, Central Provinces, for the year 1882-83. Fep. Nagpur, 1883.

Report on the Police Administration of the Central Provinces for 1882. Fep. Nagpur, 1883.

Report on the Jails of the Central Provinces for 1882. Fep. Nagpur, 1883.

Report on the working of the Government Charitable Dispensaries in the Central Provinces for 1882. Fep. Nagpur, 1883.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

G. V. Juggarow's Observatory, Daba Gardens, Vizagapatam. Results of Meteorological Observations, 1881. 12mo. Madras, 1882.

G. V. JUGGAROW'S OBSERVATORY.

BADEN-POWELL, B. H. A Manual of Jurisprudence for Forest Officers. 8vo. Calcutta, 1882.

Selections from the Records of the Government of India, Home Department. No. 191. 8vo. Calcutta, 1883.

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HOME DEPARTMENT.

Catalogue of Mammalia in the Indian Museum, Calcutta, by John Anderson. Part I. (6 copies.) 8vo. Calcutta, 1881.

Catalogue and Hand-Book of the Archæological Collections in the Indian Museum, Part I. Asoka and Indo-Scythian Galleries, by Dr. J. Anderson. (6 copies.) 8vo. Calcutta, 1883.

INDIAN MUSEUM, CALCUTTA.

STIEVE, FELIX. Churfürst Maximilian I. von Bayern. 4to. München, 1882.

K. AKADEMIE DER WISSEN., MUENCHEN.

BOCK, CARL. Reis in Oost- en Zuid-Borneo, van Koetei naar Banjermassin, ondernomen op last der Indische Regeering in 1879 en 1880. Met Historische Inleiding over Koetei en de Betrekkingen van dit Leenrijk tot de Regeering van Nederlandsch-Indië, door P. J. B. C. Robidé van der Aa. Part I, with Atlas of Plates. 4to. 'S Gravenhage, 1881.

K. INST. VOOR DE TAAL-, LAND-, EN VOLKENK. VAN NEDERL. INDIE.

Local Self Government in Madras. With Appendices. Fep. Madras, 1883.

MADRAS GOVERNMENT.

ABBOTT, CHAS. C. Primitive Industry: or Illustrations of the Handiwork, in Stone, Bone and Clay, of the Native Races of the Northern Atlantic Seaboard of America. 8vo. Salem, 1881.

PEABODY ACADEMY OF SCIENCE.

NANJIO, BUNYIU. A catalogue of the Chinese Translation of the Buddhist Tripitaka, the sacred Canon of the Buddhists in China and Japan. 4to. Oxford, 1883.

SECRETARY OF STATE FOR INDIA.

Adresse aux Chambres Législatives au Sujet de la Carte Géologique de la Belgique, par G. Dewalque. 8vo. Liège, 1883. Pam.

SOCIÉTÉ GÉOLOGIQUE DE BELGIQUE.

PERIODICALS PURCHASED.

- Benares. Fallon's New English-Hindustani Dictionary, Part XIII.
 Berlin. Deutsche Litteraturzeitung,—Vol. IV, Nos. 5-16.
 ———. Journal für die reine und angewandte Mathematik,—Vol. XCIV, No. 2.
 ———. Sanders' Ergänzungs-Wörterbuch der deutschen Sprache,—Nos. 25 and 26.
 Calcutta. The Calcutta Review,—Vol. LXXVI, No. 152, April, 1883.
 ———. Indian Medical Gazette,—Vol. XVIII, Nos. 4-5, April and May, 1883.
 ———. Stray Feathers,—Vol. X, No. 5.
 Cassel. Botanisches Centralblatt,—Vols. XIII, Nos. 5-13; XIV, Nos. 1-3.
 Edinburgh. The Edinburgh Review,—Vol. CLVII, No. 322.
 Geneva. Archives des Sciences Physiques et Naturelles,—Vol. IX, Nos. 3-4.
 Göttingen. Gelehrte Anzeigen,—Nos. 11-20, 1883.
 ———. Nachrichten,—Nos. 2-4, 1883.
 Leipzig. Annalen der Physik und Chemie,—Vols. XVIII, No. 4; XIX, No. 1.
 ———. Beiblätter,—Vol. VII, Nos. 2-3.
 ———. Hesperos,—Vol. II, Nos. 42-47.
 ———. Litterarisches Centralblatt, Nos. 6-17.
 London. Annals and Magazine of Natural History,—Vol. XI, Nos. 63-64.
 ———. British Association for the Advancement of Science,—Report of the fifty second meeting, held at Southampton in August, 1882.
 ———. Chemical News,—Vol. XLVII, Nos. 1215-1224.
 ———. Entomologist,—Vol. XVI, Nos. 238-239.
 ———. Entomologist's Monthly Magazine,—Vol. XIX, Nos. 226-228.
 ———. Ibis,—Vol. I (5th Series), No. 2.
 ———. Journal of Botany,—Vol. XXI, Nos. 243-244.
 ———. Journal of Conchology,—Vol. III, Nos. 9-12.
 ———. Journal of Science,—Vol. V, Nos. 111-112.
 ———. London, Edinburgh, and Dublin Philosophical Magazine,—Vol. XV, Nos. 93-94.
 ———. Messenger of Mathematics,—Vol. XII, Nos. 9 and 11.

- London. Mind,—No. XXX, April, 1883.
 ———. Nineteenth Century,—Vol. XIII, Nos. 73-74.
 ———. Numismatic Chronicle,—Vol. II (3rd Series), No. 8.
 ———. Publishers' Circular,—Vol. XLVI, Nos. 1093-1095.
 ———. Quarterly Journal of Conchology,—Vol. I, Nos. 1-2.
 ———. Quarterly Review,—No. 310, April, 1883.
 ———. Society of Arts,—Journal, Vol. XXXI, Nos. 1581-1590.
 ———. Westminster Review,—No. CXXVI, April, 1883.
 New Haven. American Journal of Science,—Vol. XXV, Nos. 145-148.
 Paris. Annales de Chimie et de Physique, March, 1883.
 ———. Comptes Rendus,—Vol. XCVI, Nos. 9-18.
 ———. Journal des Savants,—December, 1882; and January, 1883.
 ———. Revue Critique,—Vols. XV, Nos. 10-19.
 ———. Revue des deux Mondes,—Vols. LVI, Nos. 1-4; LVII, No. 1.
 ———. Revue Scientifique,—Vol. XXXI, Nos. 9-19.
 Philadelphia. Tryon's Manual of Conchology, Vol. V, No. 1.

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- AMOS, SHELDON. The Science of Politics, 12mo. London, 1883.
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 Encyclopædia Britannica. Ninth Edition. Vol. XV. 4to. Edinburgh, 1883.
 GOULD, JOHN. Birds of Asia, Part 34. Fol. London, 1883.
 Report on the Scientific Results of the Voyage of H. M. S. Challenger.
 Zoology, Vol. VI. 4to. London, 1882.
 SCOTT, ROBERT. H. Elementary Meteorology, 12mo. London, 1883.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR JULY & AUGUST, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 1st August, 1883, at 9.15 P. M.

THE HON'BLE H. J. REYNOLDS, President, in the Chair.

The COUNCIL reported that no meeting was held in July as a quorum of members was not present.

The minutes of the June meeting were read and confirmed.

The following presentations were announced :—

1. From the Secretary of State for India,—(1) The Vinayapitakam, by Dr. H. Oldenberg, Vol. V. ; (2) Müller's "Sacred Books of the East," Vols. XVII, XIX, and XXIII.

2. From the Batavian Society of Arts and Sciences,—(1) Catalogus der Numismatische Afdeeling van het Museum ; (2) Chineesch-Hollandsch Woordenboek van het Emoi Dialekt, by J. J. C. Francken and C. F. M. de Grijns.

3. From the Authors and Translators,—(1) Offenes Schreiben als Antwort auf Herrn Baron Osten-Sacken's "Critical Review" meiner Arbeit über die Notacanthén, by Friedrich Brauer ; (2) The Religious Sects of the Hindus, Part III, by Okhoy Kumar Dutt ; (3) The Development of the Mineral Resources of India, by A. N. Pearson ; (4) Sanskrit Wörterbuch by Otto Böhtlingk, Part IV ; (5) On some Effects produced by Landslips and Movements of the Soil-cap, and their resemblances to phenomena which are generally attributed to other agencies, and (6) On recent additions to our knowledge of the Gold-bearing Rocks of Southern India, by V. Ball ; (7) Catalog der Conchylien-Sammlung, by Fr. Paetel ; (8)

A Chapter from Brunnhofer's Life of Giordano Bruno. Translated from the German, by N. Trübner; (9) On the Fresh-Water Shells of the Island of Socotra collected by J. Bayley Balfour, Part III, and (10) On specimens of the male and female of *Phasianus humia* from Manipur, by Col. H. H. Godwin-Austen; (11) The Rámáyana of Tulsi Dás, translated from the original Hindi, by F. S. Growse; (22) Catalogue of Fishing Appliances sent to the International Fisheries Exhibition, London, by the Government of Bengal, compiled by Dr. J. Anderson; (13) Alphabetical Index to Mr. C. Marvin's Works and Translations about Central Asia generally, prepared by Major W. E. Gowan.

4. From the Madras Government,—Suggestions regarding Forest Administration in the Madras Presidency, by Dr. D. Brandis.

5. From the Secretaria de Fomento, Guatemala—Informe que el Jefe de la Seccion de Estadistica, sobre los trabajos ejecutados durante el año de 1882.

6. From the Meteorological Reporter to the Government of India,—Report on the Meteorology of India in 1881 (Seventh year). By H. F. Blanford.

7. From the Ceylon Branch, Royal Asiatic Society—Oriental Studies, by Hugh Nevill, Part I, Study No. ii, Part 1.

8. From the Surveyor-General of India,—(1) Account of the Operations of the Great Trigonometrical Survey, Vol. IX; (2) General Report on the Operations of the Survey of India during 1881-82; (3) Map of Turkestan, in four sheets, 6th Edition.

9. From the Australian Museum, Sydney,—Report of the Trustees for 1882.

10. From the Committee, Norwegian North-Atlantic Expedition—Meteorology, by H. Mohn.

11. From the Secretary of the Interior, United States,—Compendium of the Tenth Census (June 1st, 1880), Parts I and II.

12. From the Syndics of the Cambridge University Press—Catalogue of the Buddhist Sanskrit Manuscripts in the University Library, Cambridge, by Cecil Bendall.

13. From R. D. Oldham, Esq.,—Photograph of an Edict of Asoka at Kalsi in Jaonsar.

14. From the Curator of Ancient Monuments in India,—Memorandum on ancient Monuments in Eusofzai.

In presenting the photograph of the Edict of Asoka to the Society, Mr. Oldham remarked:

The Edict of Asoka, of which I have the pleasure to present a photograph to the Society, is situated about two miles south of the small town of Kalsi close to the junction of the Pous and Jumna rivers in Jaonsar. It

is carved on two faces of a huge block of quartzite, the third or northern face having carved on it an outline sketch of an elephant which has been very much libelled in the transcript given in General A. Cunningham's "Corpus Inscriptionum;" the stone stands in a niche cut in the steep slope separating the upper terrace, on which is the dak bungalow, from a lower one, which is again raised above the low lands bordering the Jumna, the drop in each case being about 40 feet. When originally discovered it is said (and its position bears out the statement) to have been partly imbedded in the slope of gravel, so that one would be tempted to suppose that since it had been set up the rivers had deposited some 40 feet of gravel, and then, cutting these away just sufficiently to exhibit the stone, had again cut down the level of their beds another 40 feet. This, however, is extremely improbable, for, not only is the time that can be granted a bare 2000 years, but in the Dun close by are old wells, said to date from the same period and certainly of great antiquity, which shew no signs of there having been any deposition or erosion in their vicinity. I can only suppose that the stone on which the inscription is carved must have been selected on account of its size and that the gravel, which then covered a considerable portion of it, was removed sufficiently to exhibit the stone in its entirety; in course of time the memory of its founder died away, the banks surrounding it on three sides fell in and partially covered it once more till it was discovered and re-excavated by Mr. Forest. At first it was allowed to stand unprotected but an idea having entered the head of the British soldier that it was the tomb of Alexander the Great, it was found necessary to protect it by the wooden paling shewn in the photograph.

The following gentleman, duly proposed and seconded at the last meeting, was ballotted for and elected an Ordinary Member :

Kumar Isvariprasad Garga, Zemindar of Maisadal.

The following gentlemen are candidates for ballot at the next meeting :

1. R. R. Pope, Esq., C. S., proposed by G. S. Leonard, Esq., seconded by Dr. H. W. M'Cann.
2. E. E. A. Kuster, Esq., Darbhanga, proposed by G. A. Grierson, Esq., seconded by Dr. A. F. R. Hoernle.
3. Edward E. Oliver, Esq., C. E., proposed by H. F. Blanford, Esq., seconded by Dr. W. Schlich.
4. Dr. Aghorenath Chatterjee, D. Sc., proposed by Babu P. N. Bose, seconded by H. B. Medlicott, Esq.
5. Babu Nanda Kumar Ray, M. B., C. M., proposed by Babu P. N. Bose, seconded by H. B. Medlicott, Esq.
6. Manomohan Ghose, Esq., Barrister-at-law, proposed by Babu P. N. Bose, seconded by H. B. Medlicott, Esq.

The following gentlemen have intimated their desire to withdraw from the Society—

A. W. Garrett, Esq.

Babu Sreenath Chunder.

Babu Judav Chandra Goswami.

Lieut.-Col. R. de Bourbel.

The COUNCIL reported that Colonel A. C. Toker had been elected a member of the Philological Committee and Mr. Amir Ali a member of the History and Archæology Committee.

The COUNCIL reported that Mr. J. Eliot had resigned the Honorary Treasurership of the Society as he was going on leave and that Mr. F. W. Peterson had kindly consented to undertake the duties of Treasurer.

The COUNCIL reported that they had learnt through Dr. Sprenger and Mr. Grote of the existence of a new MS. of the *Iṣābah* in the Khedivian Library at Cairo, and that they were endeavouring to obtain through Government either the loan or a transcript of it for the Society's edition of the work in the *Bibliotheca Indica*.

Dr. Sprenger writes :

"In the Catalogue of the Khedivian Library at Cairo printed in A. H. 1289 occurs in p. 35 a copy of the *Iṣābā* (Biographical Dictionary of persons who knew Muhammad) in six parts. I think at this moment either the loan of this copy, or at least a transcript, might be obtained by the Asiatic Society of Bengal, for completing the edition commenced by me.

"The book contains so many proper names and dates that the acquisition of another copy would be useful even for those parts which are published or of which there is a Manuscript in Calcutta, for it is very desirable that as many Manuscripts as are procurable be compared and the variants and necessary corrections be added at the end."

The SECRETARY reported that the following Coins had been acquired under the Treasure Trove Act :

44 copper coins found at Fatehgarh, in the Furrukhabad District, North-West Provinces :

6 gold coins found in Madhubpore, Thana Jehanabad, District of Hooghly :

39 silver coins found to the north of Doulutpore in Thana Dewan, Serai, Murshidabad District.

Regarding this purchase of coins, the Philological Secretary remarked :

The Gupta coins all belong to well-known types, but some of those purchased by me were not in the Society's collection, while others showed

new "monograms." I believe they will be noticed by Mr. Smith in his forthcoming Essay on the Gupta coins.

The Bengal coins were mainly of Násiru-d-dín Maḥmúd Sháh I, and his successor Ruknu-d-dín Bárbak Sháh. Among them were a large number of entirely new types; thus several of Bárbak Sháh, giving his entire names and titles: "Ruknu-d-dín Abúl Mujáhid Bárbak Sháh." One of Maḥmúd's coins gave the new date 864. What is particularly worthy of notice is that the coins (many dated) of both Maḥmúd Sháh and Bárbak Sháh call them indifferently, Abúl Mujáhid and Abúl Muẓaffar; thus showing that these two Sultáns were in the habit of using both names. Descriptions and drawings of these Bengal coins will be published in the Journal, Part I.

The following papers were read—

1. *On the recent existence of Rhinoceros indicus in the North-West Provinces, and a description of an Archaic Rock painting from Mirzapur representing the hunting of this animal.*—By JOHN COCKBURN. (*With Illustrations*).

While hunting in the ravines of the Ken river, two miles due south of the town of Banda, Mr. Cockburn's attention was attracted by a number of minute fragments of teeth which whitened the surface of a ridge. On closer examination he identified the outlines of the skull of a rhinoceros; and on digging up the spot, several fragments of bone were discovered which, when examined by Mr. Cockburn and Mr. R. Lydekker, were found to be those of *Rhinoceros indicus*. In addition to this piece of evidence of the existence of this animal in the North-West Provinces, Mr. Cockburn has lately come across two or three drawings of the rhinoceros in some caves he has explored. The most important of these drawings is one obtained from the Ghormangur Rock shelter near the fortress of Bijagarh in the Mirzapur District. Mr. Cockburn has made a tracing of the drawing which was exhibited at the meeting. Six men are shown attacking a rhinoceros. One of these men the animal has tossed with his horn, while another, wearing an unusually large head-plume, endeavours to draw the animal off by attacking him in the rear with a spear. The other men are all armed with spears: only one of them appears to be entirely naked, all the others having on a short kilt, probably resembling the fringed kilts worn by savages in all parts of the world. Mr. Cockburn concludes his paper by mentioning his reasons for believing the spears shown in the drawing to have been made of wood and stone only.

This paper will be published in the Journal, Part II.

2. *Notes of a trip up the Dihing Basin to Dapha Pani, &c., January and February, 1882.*—By S. E. PEAL.

Mr. Peal explains the object of his trip as being to make enquiries connected with the feasibility of a trade route from Assam to the east towards the Shan States to China. Taking into consideration the unsettled state of Upper Burmah, and the fact that explorations for this purpose are more needful east than west of Nawadi, Mr. Peal chose for his trip the upper Dihing basin, previously visited by only one European, Wilcox, in 1827. Starting from Jaipur on the Dihing, Mr. Peal went by land to Makum, and then, passing Tora Kusi, went on to Bor Phakial where he secured a canoe and proceeded up the stream past Tirapmuk, Moko, Paka-i-ling, Kerim Pani, Bisa, as far as Loaung: here the canoe was made over to the Loaung Gam's keeping, and the party proceeded by land to Bishi and then on to the Dapha Pani. Here they found a very wide, grassy and flat valley extending some miles towards the north and bounded on the west by a spur, while to the east, running north and south, was a very remarkable level and straight cliff, alluded to by Wilcox who visited the place in 1827. This cliff was so level and straight as to look very like a huge railway embankment; and at a short distance behind could be seen another similar cliff, extending for some miles. Mr. Peal was informed by one of his carriers, a Kampti, that there is only one passage up to the plateau above in the whole length of about seven miles: the top of the first cliff is perfectly flat and level to the foot of the second cliff, and then flat again for a long way in. Mr. Peal suggests that the land was once continuous between the western spur and the crest of the east cliff and that the whole Dapha Pani valley has been slowly cut out to its present depth. The river appears to have a rapid fall, and in the rains the floods must be heavy and violent extending right across the valley. After spending a few days in this locality, Mr. Peal commenced his return journey.

On his journey Mr. Peal obtained as much geographical and other information as he could, both from actual observation and from the men he met, and concludes his paper by giving a summary of the results of his trip. First, as to the direct route up Dihing or Diyun Kha, past Bisa, Bishi and Khomong for Mung Kamti, he learnt that the route as far as he went, and possibly as far as Khomong, is not so difficult as he had expected. The great difficulty is the want of supplies: as the country is uninhabited, supplies for about ten days have to be carried. There are fewer villages now than there were in Wilcox's time, as in a certain tract of country where Wilcox passed five or six villages, Mr. Peal found none. Mr. Peal frequently saw the signs of former villages and always where indicated in Wilcox's map, though the names there given are not spelt correctly, for

instance, Insoong for Nchong, Puseelah for Bisa-la, &c. This want of population does not exist to the same degree east of the Mli Kha, whence there are several routes eastward. According to the Kunungs and a Kamti, the Domai is the same as the Shoemai and a somewhat larger stream than the Mli Kha, confirming the supposition of Dr. Clement Williams and of Dr. Anderson, who read a paper on this river some years ago in which he fairly showed it to be the main source of the Irawadi. If a route is ever feasible between Assam and, say, Atentse, viâ Mung Kamti and the Lutze or Kunung country, it will be, in Mr. Peal's opinion, by the construction of light wire bridges over the numerous deep valleys or gorges and mountain torrents which at present are extremely difficult to ford or ferry. Mr. Peal, however, is doubtful whether such a route would after all be of much practical use. The difficulty of getting out of Asam at the eastern extremity is one thing, but that of getting into China is quite another. He is, too, of the opinion that the idea of a so-called "neutral zone" surrounding Asam on the east and south-east is erroneous, and gives his reasons for believing that the tracts lying to the east and south are claimed by the king of Burma.

Mr. Peal's paper was illustrated by maps and sketches and will be published in Part II of the Journal.

3. *A short account of the Petrographs in the caves or rock-shelters of the Kaimur Range in the Mirzapur District.*—By JOHN COCKBURN.
(With Illustrations).

Caves, strictly so-called, are uncommon in the sandstone formation of the Kaimur Range, although they are met with occasionally; but what are termed rock-shelters are exceedingly numerous throughout the Kaimurs. Many of these contain drawings in red pigment representing men, women and animals, weapons, utensils, symbols of religion, &c.: hunting scenes predominate.

The rock shelters observed by Mr. Cockburn are all in the eastern half of the Mirzapur district, taking Mirzapur as a centre, and may be classified as follows:

The Ahraura group. (1) Chunadarî in the gorge of the Gudheye nadi, (2) Bhaldurî, (3) Murround, $2\frac{1}{2}$ miles from Sookerit, (4) Kupsa near Ahraura.

The Chakia group. (1) Rajduree, gorge of the Chanduparbah, (2) Amchua.

Robertsganj group. (1) Temple mound cave, village of Roump, (2) Symbol cave, (3) Lohri shelter, (4) The Ghat cave and a number of others, all within a radius of three miles.

Shahganj group. Leekunia, five miles south-east of Rájpur, Sorhow cave and a great number in Kandakote itself and in the vicinity.

Bijaygarh group. (1) Harni Harna, a mile from the fortress of Bijaygarh, (2) Dharan Ghat near Peepurdar, (3) Gomunwa, (4) Ghormangur, two miles south of Mow Kallan bridge.

The Leekunia rock shelter was the first Mr. Cockburn visited and it proved to be one of the most interesting. The following are a few of the objects depicted on its walls: figure of a man strangling a python, five human figures apparently dancing, a man throwing what Mr. Cockburn supposes to be the wonguim or "come-back boomerang," a bull bison, a savage spearing a sambar hind and many others. In the Sorhow ghat cave, Mr. Cockburn found more than a thousand agate and other implements, a selection from which was exhibited at the meeting. A number of pieces of hæmatite and a flat obtusely pointed pencil of chalk were also found. On grinding these up with oil, Mr. Cockburn was enabled to produce colours exactly like those used in the cave drawings. This shelter also yielded a number of pieces of pottery and fragments of split and charred bones. In the Ghat shelter there were no drawings of animals, but yards of curious scroll-like characters which look like writing. A specimen of these characters Mr. Cockburn has sent down to Dr. Rájendralála Mitra to decipher.

In discussing the history and ethnology of the Mirzapur district, Mr. Cockburn states that the aboriginal tribes inhabiting the district at the present day are Kols, Gonds, Cheroos, Báigás, Khurwars, Bhoyas or Bhoinhars, Bhuttias, Domes, Moosahirs, Chámárs and Manjis. The Cheroos, Bhoyas and Bhuttias are said to be branches of the same family, and are most likely the authors of the petrographs. The petrographs themselves Mr. Cockburn does not consider to be more than six or seven centuries old, and he is disposed to think that many of them will prove to be of even later date.

The author is preparing his paper for publication in the *Journal*, Part II.

In the discussion that followed the reading of Mr. Cockburn's paper, great doubt was expressed as to whether drawings made merely by hæmatite on the surface of sandstone could last in such perfect preservation for so long a time as was supposed by Mr. Cockburn.

4. *Note on Māhishmati or Mahesvara (Mahesar) on the Narmadā, and the identification of Hiouen Tshang's 'Mahesvarapura.'*—By P. N. BOSE, B. Sc., F. G. S.

Last year in a short paper on some pottery found at Mahesvara on the Narmadā, I cited the authority of General Cunningham for its identification with the "Mo-hi-shi-fa-lo-pu-lo" of Hiouen Tshang.* On a subsequent reference to his work, however, I found that his "Mahesvarapura" is quite a different place, the limits of its territory being fixed approximately as "extending from Dumoh and Leoni (?) on the west to the sources of the Narbada on the east."†

Mahesvara (the place of my finds) being, as will be shewn in the sequel of this note, a city of great antiquity, and the only one of that name on the Narmadā, I concluded, with culpable haste no doubt, that it must be identical with the "Mahesvarapura" of General Cunningham, and omitted to examine his description closely.

The place identified by this eminent archæologist is known as Mándlā or Garh-Mándlā, south of Jabbalpur, also on the Narmadā like our Mahesvara, but no less than 300 miles to the east. The ancient name of Mándlā is given as Makawati‡ by Tod. Sleeman in a paper on the "Gurha Mandla Rājās" in the Journal of the Asiatic Society§ spells this as "Mahikmati"; and General Cunningham changes it to "Māhishmatipura," though quoting Sleeman as his sole authority.

Granting this alteration to be warrantable, it is nowhere mentioned as "Mahesvarapura" or "Mahesvara," and unless it could be shewn that this name was also applied to ancient Mandla, the identification of Hiouen Tshang's "Mahesvarapura" with it is certainly questionable.

Starting from Jajhoti (modern Khajura), a journey of 900 li to the north is stated to have brought the Chinese pilgrim to Mahesvarapura.|| General Cunningham proposes to read this as "900 li (or 150 miles) to the south," in which position he finds Mándlā. But he, having got the pilgrim there, does not find any means of getting him out of it. The following passage concludes the notice of Mahesvarapura in the Memoirs:

"En sortant de ces pays, il revint dans le royaume de Kiu-tehe-lo (Gourdjdjara), puis il reprit la route du Nord. Après avoir fait dix neuf

* Journ. As. Soc. Vol. II, part I, p. 228.

† "Ancient Geography" p. 489. 'Leoni' is probably a misprint for Seoni.

‡ "Rājasthán," Vol. II, p. 445, (quoted in the Central Prov. Gaz. Introduction, p. 1.).

§ *Op. cit.* for 1837, p. 622.

|| "Mémoires de Hiouen Tshang," II. p. 169.

cents li à travers des plaines sauvages et des déserts dangereux, il passa le grand fleuve Sintou, et arriva au royaume du même nom.”

Now, Gurjara [Kiu-tche-lo] to which Hiouen Thsang returned from his Mahesvarapura is nearly 600 miles from Mandla in a straight line; whereas the language of the text just cited would convey the impression that the two kingdoms were in close proximity. Besides, it is not likely that he would go so far out of his way to visit a heretic town of comparative insignificance, as Mandla must have been at the time.

Again, the pilgrim distinctly states that the king of Mahesvarapura was a Brāhmaṇa. On the other hand, we have the unquestionable testimony of an inscription that the king of Mandla at the time of his visit was of Gond-Rajput descent,* whose highest pretensions could never have risen any higher than the style of a Kshatriya; and a cultured traveller of Hiouen Thsang's stamp would surely know the difference between Kshatriyas and Brāhmaṇas.

M. L. Vivien de Saint Martin identifies Mahesvarapura with Mācheri.† It is 130 miles north—10° or 15°—west of Jajhoti. The distance and bearing agree as closely as may be expected with that given in the *Memoirs*, viz., “150 miles to the north.” Besides, its position harmonises remarkably with the statement in the “*Memoirs*” already quoted, viz., that leaving the territory of Mahesvarapura, the pilgrim re-entered the kingdom of Gurjara. The eastern boundary of this kingdom, which is given as extending from Junjhnu to Mt. Abu along the Aravalis,‡ is only 100 miles from the town of Mācheri, and must have touched upon the western limit of the kingdom of that name as its circuit is given as 500 miles.§ I think, on the whole, the probabilities are in favour of M. L. Vivien de St. Martin's identification.

General Cunningham also considers the Maheṣa-Maṇḍala to which Aśoka sent the Thero Mahādeva to be the same as Mandla. There is absolutely no proof whatever that the place, if anciently called by this name, ever had Maheṣa for a prefix. Besides, so early as B. C. 240, Mandla was probably a place of little importance. On the other hand, my supposition that “Mahesa-Mandala” is probably preserved in the names “Maheṣvara” and “Mandaleṣvara,” which are only four miles apart, also rests on very scant data.

The proofs of the antiquity of our Maheṣvara, however, are overwhelming. I did not cite them as they are chiefly of a traditional character; but I find their cumulative evidence to be by no means inconsiderable.

* Sleeman, *Journ. As. Soc.* 1837, p. 625. The reigning king at the time was either Gopāl Sa or Bhopāl Sa.

† *Op. cit.* p. 408.

‡ Cunningham, *op. cit.* p. 312.

§ Cunningham, *op. cit.* p. 489.

Maheṣvara was anciently known as Māhishmatī after Mahishmat, seventh in descent from Yadu.* The city is called by this latter name in inscriptions dated so late as the time of the Emperor Akbar. A small river which joins the Narmadā east of it is still known as Māhishmatī.

Māhishmatī was visited by Sahadeva during his campaign of conquest.† It is also noticed in the Mahābhārata, *Udyogaparva*,‡ as well as in the *A'di-*, *Vana-*, and *Anuśāsana-parvas*, chiefly in connection with the thousand armed Kārtavīryārjuna. In the last named parva he is described as "lord of this whole world, living in Māhishmatī. This Haihaya of unquestioned valour ruled over the whole sea-girt earth with its ocean and continents."§

Rāvaṇa, the king of Lankā, is mentioned in the Vishṇu Purāṇa|| as having been taken prisoner at Māhishmatī by Kārtavīrya and kept confined like a wild beast in a corner of the city.

When Kārtavīrya lived it is impossible to tell. He seems to have been the contemporary of Rāvaṇa and Paraśurāma, and so many anecdotes of supernatural strength have gathered round his name that he appears to us almost as a mythical personage. Nevertheless, it is surprising how numerous are the traditions still preserved of him at Maheṣvara. There is a well-known fall, a little below the city, which is called Sahasradhārā after the thousand-armed king. And what concerns us more closely, the ruins at *Mandāl kho* are still held to be those of his capital—the ancient Māhishmatī or, as it is popularly known, the *Sahasra-bāhu-ki-bastī*.

Col. Wilford identifies Māhishmatī as Choli-Maheṣvara,¶ which is identical with our Maheṣvara, Choli being a small town four miles to the north of it. Fitz-Edward Hall who paid a visit to the place confirms this identification** and Col. Tod†† also mentions Maheṣvara as "Sahasra-vahuka basti."

5. *Are there Tenses in Arabic?*—By GEORGE HUGHES, C. S., late Demy of Magdalen College, Oxford.

By tenses are understood determinations of the verb to time past, present, or future, by modifications of the verb itself. The European

* Wilson's Vishṇu Purāṇa, Vol. IV, p. 54, (Book IV, Ch. XI).

† Mahābhārata, *Sabhāparvan*, verses 1124, 1130, &c.

‡ See Wilson's *Vishṇu Purāṇa*, Vol. II, pp. 166-67.

§ See Muir's Sanskrit Texts, I. pp. 448, ff.

|| *Op. cit.* IV. 11, 3. The Bhāgavat Purāṇa relates the same story. See Muir, *op. cit.* Vol. I, p. 478.

¶ As. Res. IX, p. 105.

** Wilson's "Vishṇu Purāṇa," Vol. II, p. 167.

†† "Antiquities of Rājasthān" (Vol. I, p. 39, note) quoted by F. Hall, *Vishṇu Purāṇa*, IV, p. 59.

grammars distinguish in Arabic two primary tenses, the *máđí* and the *muđári'*. The classification is taken from the native grammarians, and the only question that can arise is whether it has been adopted in the sense in which it was put forth. The account given is that the *máđí* is, in meaning and applications, equivalent to *preterite*, *muđári'* meaning "analogical" and being so called because it partakes of the nature of the substantive. This division is clearly illogical, and therefore suspicious, and suggests a belief that the full sense of the terms may not have been apprehended. The suspicion is confirmed when we find that while the *máđí* is primarily assigned to the denotation of the past, there are numerous cases where it must be used for present and future, while the *muđári'*, appropriated to present and future, is of constant use in reference to the past.

The verb *mađà* means, *inter alia*, and according to the conventional system of rendering, *praeteriit*, *abiit res*, but this would make *máđí* mean not *praeteritus* but *praeteriens*. It also means *penetravit*, *perrexit in re*. In the *Muntaha-l-Arab*, which resumes the bulk of Arabian dictionaries, the renderings of *máđí* into Persian are *gúzarindah o qaṭi'-i har chih báshad o sher-i-besha o shamshír o mard-i-rasá dar umúr*, *i. e.*, effective, trenchant, lion of the jungle, sword, capable in affairs.

If, then, the *máđí* be taken to be the *effective*, *actual*, form of the verb, while the *muđári'* is negatively defined as not effective, not actual, and quasi substantive, we have a clear provisional account of the matter, but one which excludes any immediate recognition of tense.

The result stands thus :—

English Present	I write	I am writing
English Past	I wrote	I was writing
English Future	I shall write	I shall be writing
	The Arabic <i>máđí</i> كاتب katabtu	The Arabic <i>muđári'</i> اكتب aktubu

The system of syntax, not the system of inflexion, provides the requisite adjustments of the Arabic verb to express relations of time.

This account of the matter is confirmed by the alternative technical terms for the *máđí* and *muđári'*, *viz.*, 'ábir and ghábir, (= overt and covert), and is not contradicted by anything but the practice of European grammarians, which, in consequence, is terribly involved and embarrassing to the student, I may say embarrassing to themselves. There have been no more consummate masters of grammatical science than De Sacy and Mr. Howell. Yet they differ in their normal translation of the simplest type of an Arabic sentence. *لو فعلت كذا فعلت كذا* De Sacy habitually renders "If you were to do so and so, I should do so and so"; Mr. Howell,

"If you had done so and so, I should have done so and so." Neither is wrong; neither would seem to be right. Each adds of his own a degree of definition wanting in the detached original.

So tremendous a disparity between the verbal apparatus of Aryan and Semite naturally and necessarily cannot have failed of large external results. The Aryan tense system is rigidly demarcated on its surface. Mr. Cope could not "agree with Mr. Shilleto, *crit. not. on Demosth. de F. L. 228*, in thinking that the addition of temporal particles such as ἀπρί, πολλάκις, οὐ πρόποτε, can make any difference whatever in the 'nature' or sense of the tense: the translation of the Greek aorist by our perfect in such cases is a mere matter of idiom." The Semite has one form for perfect past, present and future; another form for imperfect past, present and future. That is all. The most illustrious instances of the disparity emerge when a Semitic thinker expresses himself in an Aryan tongue. Professor Jowett's dissertation on *Modes of Time and Place in Scripture* is very instructive upon this point, and I venture to think that the demonstrated lack of tenses in the Semitic verb offers a simple solution of the facts he has observed. I append some extracts.

"The general result of our enquiry thus far is that the modes of time in the New Testament converge towards the present moment. Not, of course, that there is no past or no future; but that they met in the τέλη τῶν αἰώνων, which are at once the revelation of both." "These mixed modes of time and place are no longer mixed to us, but clear and distinct. We live in the light of history and of nature, and can never mingle together what is inward and what is without us. We cannot but imagine, everywhere, and at all times, heaven to be different from earth, the past from the future and present. No inward conscience can ever efface the limits that separate them. No 'contemplation of things under the form of eternity' will take us from the realities of life."

All this may be so, but it will be well to remember that these modes are the essential modes of the Semitic tongues and not peculiar to the New Testament. With the Semites speech meant thought; thought was at once an act and a fact, and from that act and fact they dated and deduced things in time and space. The Aryan reverses the process, subordinating the manifestation of thought to the assumed externality of the objects of thought.

The CHAIRMAN announced that the next meeting would be held on Wednesday, the 7th November, 1883.

LIBRARY.

The following additions have been made to the Library since the Meeting held in June last.

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presented by the respective Societies and Editors.

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MISCELLANEOUS PRESENTATIONS.

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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL,
FOR NOVEMBER, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th November, 1883, at 9 P. M.

THE HON'BLE H. J. REYNOLDS, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From Dr. Rajendralala Mitra,—Eleven facsimiles of Inscriptions from Deoghar.

2. From the Authors,—(1) The Quatrains of Omar Khayyám, by E. H. Whinfield; (2) History of Burma, by Lieut.-General Sir Arthur P. Phayre; (3) De Paris au Japon en 90 Jours, by Edward Cotteau; (4) Regeneration of India, by Gopináth Sadáshivji Háte; and (5) The Rivers of the Vedas and how the Aryans entered India, by Edw. Thomas.

3. From the Bengal Government,—The Flora of British India, by Sir J. D. Hooker, Vol. III.

4. From the Home Department,—Thirty-seven volumes of Trübner's Oriental Series.

5. From the Home Department, Forest Branch,—(1) Suggestions regarding Forest Administration in the Hyderabad Assigned Districts, by Dr. W. Schlich; (2) Review of the Forest Administration in the several Provinces under the Government of India, for 1881-82; and (3) Suggestions regarding Forest Administration in the Central Provinces, by Dr. W. Schlich.

6. From the Hungarian Academy,—(1) A Magyarok eredete Ethnologiai Tanulmány, by Ármin Vambéry; and (2) A Magyar Kötöszők, by Zsigmond Simonyi, Vol. II.

7. From the Clarendon Press, Oxford,—*Anecdota Oxoniensia* ; Aryan Series, Vol. I, Part 2.

8. From the Surveyor-General of India,—Synopsis of the results of the operations of the Great Trigonometrical Survey of India, Vols. XIV—XVI.

9. From the Ceylon Government, through the Home Department,—Ancient Inscriptions in Ceylon, by Dr. Edward Müller.

10. From G. V. Juggarow's Observatory,—Results of Meteorological Observations, 1882.

11. From St. Xavier's College Observatory,—Observations from January to June, 1883.

12. From the K. b. Akad. der Wissenschaften, Munich,—Gedächtnissrede auf Karl von Halm, by Eduard Wölfflin.

13. From the Marine Department,—(1) Return of wrecks and casualties in Indian Waters for 1882 ; and (2) Diary of Richard Cocks, Cape-merchant in the English Factory in Japan, 1615-22, by Edward Maunde Thompson, Vols. I—II.

14. From the Smithsonian Institution,—Congressional Directory, by Ben. Perley Poore.

15. From the Regents of the University, in behalf of the State of New York,—Natural History of New York, Palæontology, Vol. V, Part 2, by James Hall.

16. From the U. S. Geological Survey,—Tertiary History of the Grand Cañon District, by Clarence E. Dutton.

17. From the Archaeological Survey of Western India,—Archæological Survey of Western India, Reports, Vols. IV and V.

18. From the Indian Museum, Calcutta,—Six copies of the Annual Report, April 1882 to March 1883.

19. From the Military Department,—The Historie of the Bermudes or Summer Islands, edited by General Sir J. Hen. Lefroy.

The SECRETARY reported that the following Gentlemen had been elected members of the Society by the Council during the recess, in accordance with Rule 7 :

R. R. Pope, Esq.

E. E. A. Kuster, Esq.

E. E. Oliver, Esq.

Dr. Aghorenath Chatterji.

Babu Nanda Kumar Roy.

Manomohan Ghose, Esq.

The following gentlemen are candidates for election at next meeting :

1. Lieut. T. S. Boileau, proposed by Major C. R. Macgregor, seconded by Dr. H. W. McCann.

2. Otto Chrestien Rehling Möller, Esq., Tukvar, Darjiling, proposed by L. de Nicéville, Esq., seconded by Dr. H. W. M'Cann.

The SECRETARY reported that Wazir-ud-doulaḥ Mudabbir-ul-Mulk Khalif Syad Mohamed Hussun Khan Bahadur had intimated his desire to withdraw from the Society.

The PRESIDENT reported that Dr. Krishna Dhana Ghosha and Dr. E. Lawrie were largely in arrears of subscription to the Society, and that registered letters had been sent to them in accordance with Rule 37. As no notice had been taken of these, their names would be suspended for a month as defaulters in the Society's meeting room, and, unless the sum due be paid in the meantime, they will be declared removed from the Society at its next meeting. In accordance with Rule 38, this fact will be notified in the Proceedings.

The COUNCIL reported that Babu P. N. Bose had resigned the Natural History Secretaryship of the Society and that Mr. L. de Nicéville had been elected a member of Council, and appointed to officiate as Natural History Secretary till Mr. Wood-Mason's return, subject to the confirmation of the Society.

The election was unanimously confirmed.

The COUNCIL reported that they had appointed Mr. J. H. Elliott as Assistant Librarian in the place of Mr. A. S. Tiery who had resigned.

The SECRETARY reported that intimation had been received that the Governor-General in Council had applied to the Secretary of State for India requesting him to take the necessary steps to obtain for the Society from the Egyptian Government the loan of the copy of the *Iḥābah* now in the Khedivian library at Cairo, and referred to in the Proceedings for August : or, if this could not be done, enquiring whether a transcript of the work could be arranged for, and at what cost.

The SECRETARY reported that the following coins had been acquired under the Treasure Trove Act :

3 silver coins of Shah Ghazi from the sub-divisional officer, Hajepore ;

5 silver coins found on the banks of the river Dwarikēśvar, near the village Pithaipore, in thāna Bishenpore, District Bankoora, from the Collector of Bankoora ;

11 silver coins (of 'Alauddīn Muhammad Shāh and Tājuddīn Fīrūz Shāh) found in the fields of Madzah Karinja of the Lauji Pargana, Balaghat District, Nagpur Division, from the Deputy Commissioner of Balaghat ;

6 silver coins of Muhammad Shāh and Aurangzib, from the Deputy Commissioner of Raipur, Chhattisgarh Division ;

15 silver coins (Moghal, 9 round, 6 square) from the Collector of Allahabad.

The PHILOLOGICAL SECRETARY reported that a communication had been received from Prof. Max Müller stating that an edition of the Sarvānukrama was about to be published in the *Anecdota Oxoniensia*. Dr. R. L. Mitra would not therefore add this work to his edition of Śaunaka's *Bṛihaddevatā*, as had been proposed.

The PHILOLOGICAL SECRETARY read the following note by Mr. Beames in reply to the remarks made by Dr. Mitra on his paper on the History of Orissa, published in the March Proceedings :

With regard to Dr. Mitra's remarks on my paper on the History of Orissa in the Proceedings for March last, I have one or two explanations to make.

The first remark is to the effect that I have ignored the labours of what Dr. Mitra calls my "predecessors," Messrs. Hunter and Toynbee. The fact is that both these gentlemen derived most of their information from me, and it was not necessary for me to mention that certain facts stated in my paper had been communicated to and used by them. My paper is entitled "Notes", and does not pretend to be exhaustive. It adds a number of new facts to those already recorded and is not confined to Balasore. It originally formed part of a manual of that district, and in consequence more attention is given to that district than to other parts of Orissa, but sufficient notice of other parts occurs to justify the title.

As to the meaning of the word "Balasore," when I first began to collect notes for Dr. Hunter in 1869 the local Pandits informed me that the word was *Bāla* + *īśwara*, the youthful lord, *i. e.*, Krishna. As I got to know more about the matter I began to doubt this derivation. The word *īśwara* is as far as I know always restricted to Śiva and only rarely applied to Krishna. There is no temple to the youthful Krishna in or near Balasore, whereas in the village of Old Balasore (Purāna Bāneśwar), which was the original place of that name, there still exists a small, rude and very ancient temple of Bāneśwara Mahādeva.

Śiva worship, as we know, preceded Krishna worship in Orissa, and temples to Śiva all bearing the title *īśwara* in one or another compound form are found all over the country. As to the element *Bān* in the present case the Pandits were divided in opinion, some holding that it was from *vana* = forest, others deriving it from *vāṇa* = arrow. In favour of the former I adduced the large number of names of places beginning with *ban* "forest" all over Northern Orissa, while in support of the latter may be mentioned the local legend which places the capital of the legendary king *Bāṇa* near Balasore: one mass of ruins in the town still bears the

name of his daughter *Ushá* (the *Ushá merh*). Legends connected with the Arrow are common all over the north of Balasore and west of Midnapore.

As to the philological arguments which shew that there was little or no connexion between Orissa and Bengal in pre-Muhammedan times, I see Dr. Mitra thinks them untenable. He is welcome to that opinion.

That Dantún was accessible from Magadha does not prove that the country south of the Subarnarekhá was so accessible, nor can any historical argument be based on vague Buddhist legends.

But, as Dr. Mitra observes, all this was discussed ten or twelve years ago and there is no use in going over it again. I did not then know any thing about Midnapore. Now that I am acquainted with that district I have found many new facts which strikingly confirm my old opinion that Orissa was colonized from Behar and not from Bengal, and that Ooriya is a more archaic form of Magadhi Prákrit than Bengali.

Dr. HOERNLE exhibited impressions from a gold coin belonging to Mr. Walter Campbell, and read some extracts from his letter accompanying the impressions. The coin had been found in the ruins of Gaur, and Mr. Campbell thought it might be one of the Empress Riziya of the year 638 A. H. Dr. Hoernle observed that he had not been able to identify the coin, but it certainly was not a coin of Riziya, as it did not show the well-known and very distinct type of the early Delhi coins. The type of Mr. Campbell's coin was a comparatively late one; it very closely resembled some types of Akbar's coinage, and was particularly like Akbar's coin No. DCCCXIII, in Plate XXXIX of Marsden's *Numismata Orientalia*. The impressions were too indistinct to make out the name which Mr. Campbell had incorrectly read as Riziya; nor could he discover any figured date 638. If there was a date on the margin, it might possibly be 938; but in any case, it must be some date in the 10th century A. H.*

Dr. A. F. R. HOERNLE exhibited 2 gold coins forwarded by Mr. H. Rivett-Carnac. He remarked that one of them was a Kadphises coin of a well-known kind of which the Society possessed several specimens. The other gold coin which was one of Kumára Gupta he believed to be unique. It showed on the obverse three standing figures, which appeared to represent Buddha, worshipped by two women, one on either side of him. The figure on the reverse apparently was the usual device of Lakshmi sitting on the lotus throne. The combination of Buddhistic and Brahmanic devices—if rightly identified—was a curious and unusual feature.

* Subsequently to the meeting another communication was received from Mr. Campbell in which he identified the coin as one of Shir Shah (A. H. 947-952). Independently, the same identification was made by Major W. F. Prideaux, who had an opportunity of examining the impression after the meeting.



The following is an extract from a note on it by Genl. A. Cunningham:

"I have not been able to make anything out of the marginal legend of Mr. Carnac's gold Gupta coin. But the name of the king is undoubtedly Kumāra Gupta—which is inscribed in two lines between the figures, thus :

Kumāra
गुप्त
Gupta

The reverse legend looks like अप्रनाश Apranasha.

The following papers were read—

1. *The Śālivāhana Era*.—By V. A. SMITH, C. S.

Prof. Max Müller observes, "Though I have throughout called the era which begins 78 A. D. the Śāka era, or the Śāka, I cannot admit that it is wrong to call it the Śālivāhana era, or speak of it, as Dr. Kern does, as the era which *Anglice*, but not in Sanskrit, is called Śālivāhana era."

The only examples of the application of the name of Śālivāhana to the Śāka era in Sanskrit writings which Max Müller can adduce are two. The first is the colophon of a Sanskrit work edited at Bombay in the year 1863 A. D., and the second is the colophon of a MS. copy of the *Muhūrtamārtanḍa* in which the date is expressed both as the year 1493 of the Śāka era, and as the year 1493 from the birth of Śālivāhana.*

The recently published Jain inscription from the Lalitpur district in Bundelkhand is interesting as affording an earlier example of the application of Śālivāhana's name to the Śāka era, being dated "in the year of King Vikramāditya 1481, that of Śālivāhana 1346." The exact date specified corresponds to the end of April or the beginning of May 1424 A. D. according to Dr. Rājendralāla Mitra.† The genuineness of the inscription is indubitable.

* Max Müller, 'India, What can it Teach us?' p. 300 (1883).

† J. A. S. B. Vol. LII, Pt. I, (1883) pp. 68, 76.

2. *Old Dutch hatchments in Chinsurah Church.*—By J. BEAMES, C. S.

High up near the roof of the old Dutch church at Chinsurah, now used as a station church by the residents of Hooghly and Chinsurah, hang, and have hung for thirteen years, strange-looking old hatchments lozenge-shaped, such as are hung on the fronts of houses in England where the owner has lately died. In the gloom of the lofty church it is impossible to make them out, but recently they were taken down while the church was under repair, and I seized the opportunity to copy them. They may be interesting as contributions to the history of the last century in India, and as the paint and gilding are fast peeling off, so that in a few years' time they will be undecipherable—in fact one or two of them are nearly so already—it may be as well to put them on record before it is too late.

It is somewhat curious that the hatchments always show the arms and crest of the deceased, but not always his name. In some cases only the initials are given. The name can of course be identified from the arms by any one acquainted with Dutch heraldry. As the Society's publications are sent to the Royal Institute of Philology at the Hague, these records of their dead countrymen will probably be found interesting there. It would be troublesome to give sketches of the coats of arms. I therefore describe them, or to speak accurately, blazon them in heraldic language.

I.

Tammerus Canter Visscher in leeven Opper Koopman secunde der Bengaalsche Directie en opper hoofde te Cassimbasaar Geb: te Pen ...* in Vriesland den 11 Augustus ann: 1729 ob: te Cassimbasaar den ...* Januar: ann^o. 1778 oud 48 jaaren 5 maanden en 20 daagen.

Arms—crest* coat, quarterly. 1st and 4th argent two muskets crossed in saltire over a sword in pale, all proper. 2nd sable, 3 mullets in fess, or; 3rd gules three scollops argent.

II.

No coat of arms. J^{no}. Isinck geb: 9 Julij 1709 te Groningen. Gestorven 25 Sept. 17 ...*

III.

J. A. Bodle ob: 15 Dec^r. 1774 Aet. 45.

No crest. Arms—quarterly, 1st and 4th sable an angel displayed proper: 2nd and 3rd azure, three fleurs de lys or, coronet of marquis, supporters, 2 griffins, party per pale azure & argent.

* The latter part of this word has peeled off; so also the date and crest. Mr. Visscher was not buried at Chinsurah. His tomb is still standing in the Dutch Cemetery at Cassimbazar: on it his birthplace is given as Pingjum, a village near Harlingen on the west coast of Friesland. See Murray's Handbook to Bengal, p. 175.

IV.

R. B. Obijt 28 Nov^r. a^o. 1733.

Crest.—a bear sejant sable. Arms—gules two bears sejant sable. Knight's helmet.

V.

Obijt—De Hasenvelter den 26 October anno 1676. Below this are two names each over a coat of arms. Van Wissel. Van Essen. Only one coat is decipherable, *viz.*, crest—a demi hare courant; arms—gules two stars or, in chief a hare courant or.

VI.

Obijt. W. A. den 13 Augustus an^o. 1668.

Crest—a moor's head coupé sable filletted or; arms—or, two fleurs de lys gules.

VII.

Den Weledelen Achtbaaren Heer George Louis Vernet* in leven Directeur van Bengalen, gebooren tot's Gravenhage Dⁱ 11 Januarij an^o. 1711 obijt tot Batavia den 13 December 1775 oud 64 jaar.

No crest. Arms—gules a bend sinister argent, in dexter chief a star argent.

VIII.

Boudewijn Verselewel Faure in leeven oud eerste Secretarius van de Hooge Regiering en Directeur van Bengalen. Geboren tot Dendermonde den 25 Jan^u. 1734 obijt tot Bengalen den 6 Meij a^o. 1770 oud 36 jaaren 3 maanⁿ en 11 daagen.

Crest—two wings argent and gules. Arms—party per fess or, and chequy of argent & gules in chief a bull's head coupé sable.

IX.

Theodora Hendrica Piekenbroek, in leeven Huijsvrouw van D. Agtbr. Heer Boudewijn Verselevel Faure oud eerste secretaris van D. Hooge Regering en Directeur van Bengalen, geboren tot Batavia 21 Julij anno 1746 Obijt tot Bengalen den 27 Maart a^o. 1770 oud 23 jaaren 8 maanⁿ. en 6 daagen.

Arms on a lozenge—argent a griffin rampant gules—surmounted by the coronet of a countess.

* Heer Vernet was the builder of the Chinsurah church as is recorded on a small tablet over the east entrance. As he died at Batavia, this is probably only a memorial like Visscher's. Mr. Vernet's memory should be cherished by all Englishmen on account of the generous succour which he afforded to our countryman Holwell when he passed Cosimbazar a prisoner on his way to Murshidabad after the tragedy of the Black Hole.

X.

Pieter Brueys van's Hage Opper Koopman en Hoofde Administrateur Overleeden te Chintsura, den 23 Augustus A 1793 in den Ouderdom van 52 Jaaren 9 maanden 17 dagen.

Crest—a flower gules: arms—party per pale vert and argent, dexter a column argent crowned or, sinister a flower gules.

XI.

P. V. D. Obijt 12 Janu: A^o. 1701.

Crest—3 torches argent flamed gules: arms—party per fess gules & sable (not very clear).

XII.

N. B. Obijt 19 Mei j A ° 1683.

Crest—horse's head erased argent: arms—party per pale argent & sable dexter a demi-eagle displayed sable, sinister a trade mark ?

4+.
NB

XIII.

Obijt. b. v. h. (in german minuscules) den. 9 Juni anno 1665.

Arms, or, in chief a lion decouped gules, in base 3 pellets. Crest—lion decouped gules.

3: *Relics from Ancient Persia*, No. III.—By GENERAL A. CUNNINGHAM, C. S. I.

(Abstract.)

Since writing his second notice of the very curious and interesting discoveries of Ancient Persian Relics on the northern bank of the Oxus, General Cunningham has obtained three more gold ornaments, and about twenty more coins in all metals.

The coins consist of a gold Daric and a silver Sigle, of the old Persian mint; a tetradrachm and four drachmas of Antiochus Soter; a gold stater and three copper coins of Diodotus of two different types; a tetradrachm, a silver Obolus, and a copper coin of Euthydemus; three tetradrachms of Antimachus Theos, with a drachma and a nickel coin of Agathokles. The silver obolus of Euthydemus is of the standing Herakles type, and is, General Cunningham believes, unique. General Cunningham again remarks on the continued absence of any Parthian coins, which, as he has said before, goes far to prove that the deposit must have been made before the time of Mithridates I (Arsakes VI). The absence of the coins of Eukratides, the contemporary of Mithridates I, points to the same conclusion; and General Cunningham now feels pretty confident that the deposit must have been made before their time, and not later than 200 to 180 B. C.

The principal ornament is a gold cylinder of fine workmanship, much superior to that of any Persian gems that General Cunningham has seen. There are two distinct scenes represented on the cylinder, both illustrating

the same subject of a Persian soldier or chief putting to death prisoners who, General Cunningham thinks, must be Indians from their dress. If this identification of the dress be correct, then the gold cylinder must be as old as the time of Darius Hystaspes, who was the only Persian king who had been engaged in war with the Indians.

The second gold object is a circular disc four inches and three quarters in diameter and has a border one quarter inch in diameter, ornamented with the conventional Greek representation of water. In the middle in very bold relief is represented a man riding a Sea Lion, or Lion with a Fish's tail. There are no holes or loops of any kind on the back to suggest what may have been the possible use of this large plaque. It might perhaps have formed the breast ornament of a king's or noble's dress, such as is seen on an Assyrian royal robe in the sculptures of Nimrud. But there are no holes round the edge by which it could have been sewn on.

The third gold ornament is an Antelope—represented in the act of leaping, with its forelegs doubled up, and its hindlegs outstretched. The hindlegs rest upon an upright flat tablet one inch and a half in height and one inch broad with a highly ornamented border on each face. There is an oblong hole under the stomach, half an inch by one quarter, which looks as if it had been intended for the insertion of some slight staff or handle. In this case it might have been carried in the hand as the symbol of some order, just as the Fish (or *Máhi Marátib*) is carried at the present day.

General Cunningham has met a man at Simla who has several times visited the spot where these Oxus relics were found. The place is one stage to the north of the Oxus, and is called Kawadian, a large ancient town on the high road to Samarkand. The guess that General Cunningham made in his first paper on these relics that the find-spot was the old town of Kobadian of the Arab Geographers turns out to be correct. General Cunningham has heard also that the owner of the land has now sold the right of exploration to a single speculator.

This paper will be published in full with plates in the Journal, Part I.

4. On *Gonardīya* and *Gonikáputra* as names of *Patanjali*.—By DR. RAJENDRALALA MITRA, C. I. E.

(Abstract.)

Quoting two passages from the *Mahábháshya*, Professor Goldstücker, in his essay on Páṇini, shows that Patanjali was the son of one Goniká, and that his native country was Gonarda. The passages merely cite the opinions of authors of the names of Gonardīya and Gonikáputra, without saying who they were; but Kaiyata, Hemachandra, Bhaṭṭojí Díkshita and Nágojí Bhaṭṭa take Gonardīya to be the same as Patanjali, and the last accepts Gonikáputra to imply the same individual. Dr. Mitra controverts

these opinions. He shows that the manner in which the names have been cited in the *Mahābhāshya* does not suggest the idea that Patanjali is quoting himself, and the context shows that he is citing opinions adverse to his own. He then quotes a number of passages from the *Kāma-sūtra* of Vātsyāyana to prove that there lived, long before the time of Patanjali, two authors of the names of Gonardīya and Goṇikāputra respectively, and that the presumption is strong that these are the authors whom Patanjali has cited. He finally retracts the opinion he had expressed in the Preface to his edition of the *Yoga Sūtra* regarding the parentage and native country of Patanjali.

This paper will be published in full in the *Journal*, Part I.

5. *On a new find of Muhammadan Coins of Bengal including some hitherto unknown ones of Mahmūd Shah I and Bārbak Shāh.*—By DR. A. F. R. HOERNLE.

(Abstract.)

A treasure consisting of 85 silver coins was found by some coolies while working at an embankment to the north of Daulatpore and south of Bansigrām in the thana Dewan Serai, District Murshidābād. As usual the coins were forwarded to the Society for examination and thus came into Dr. Hoernle's hands. The examination showed that there were 2 coins of Abūl Mujāhid Sikandar Shāh, one of Ghiyāsu-d-dīn A'zam Shāh, one of Shihābu-d-dīn Bāyazid Shāh, one of Jalālu-d-dīn Muhammad Shāh, 35 of Nāṣiru-d-dīn Mahmūd Shāh I, 45 of Ruknu-d-dīn Bārbak Shāh. A large number of these coins are very much disfigured by shroff-marks.

There are several circumstances which give these coins a particular interest. In the first place nearly half of the coins of Ruknu-d-dīn Bārbak Shāh are entirely new; and among the coins of Nāṣiru-d-dīn Mahmūd Shah I there are no less than six new types. In the second place these coins settle a curious point regarding the use of the so-called *kunyat* or patronymic appellation, showing that some rulers habitually used two *kunyats*. These coins show that both Nāṣiru-d-dīn and Ruknu-d-dīn were in the habit of using both names,—Abūl Muzaffar and Abūl Mujāhid. In the third place, one of these coins fixes a new date for Mahmūd Shāh I, showing that he was reigning in the year 864. Another is noteworthy because its reverse shows that Nāṣiru-d-dīn claimed to be the grandson of Ilyās Shāh and a son of Abūl Mujāhid Sikandar Shāh. There is a curious resemblance between one of the coins of Bārbak Shāh and a coin of Saifu-d-dīn Abūl Muzaffar Firūz Shāh II published by Mr. Blochmann in Vol. XLII of the Society's *Journal*. The resemblance is particularly striking in the reverse.

This paper will also be published in full in the *Journal*, Part I.

6. *Third list of Butterflies occurring in Sikkim during the month of October, with notes on habits, &c.*—By L. DE NICÉVILLE.

(Abstract.)

In this paper are enumerated 80 species not previously recorded as occurring in that month, bringing the total up to 283 species. Several new species are described, as well as the hitherto unknown opposite sexes of previously known species. Mr. de Nicéville states his belief that in Sikkim quite 500 species of Butterflies exist, and hopes to bring the number of species occurring in the single month of October up to 350, if not to 400. He also remarked that as far as he knew the richness of the Lepidopterous fauna of Sikkim was exceeded by some parts of Brazil alone; and that the lists he was publishing should be very useful to Lepidopterists, as previous records are few and brief respecting the exact localities and elevations where the described Butterflies from Darjiling occur. As a matter of fact but few species occur in Darjiling proper at all, the majority of the so-called Darjiling species being caught by the Lepchas in the low hot valleys in the neighbourhood. Mr. de Nicéville added that his excursions in the North-West and North-East of the Himalayas proved that the bottoms of the valleys near the running streams are the richest in Butterflies, and that next to these the extreme ridges and tops of hills were most productive, while the sides and intermediate slopes produced hardly anything.

This paper will be published in the Journal, Part II.

LIBRARY.

The following additions have been made to the Library since the Meeting held in August last.

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- . *Messenger of Mathematics*,—Vols. XII, No. 10; XIII, Nos. 1-2.
- . *Mind*,—No. XXXI, 1883.
- . *Nineteenth Century*,—Vol. XIV, Nos. 77-80.
- . *Publishers' Circular*,—Vol. XLVI, Nos. 1100-1105.
- . *Quarterly Journal of Microscopical Science*,—Vol. XXIII, No. 91.
- . *Quarterly Review*,—No. 311, 1883.
- . *Society of Arts Journal*,—Vol. XXXI, Nos. 1599-1612.
- . *Westminster Review*,—Vol. LXIV, No. 127.
- New Haven. *American Journal of Science*,—Vol. XXVI, Nos. 150-152.
- Paris. *Annales de Chimie et de Physique*,—May to August, 1883.
- . *Comptes Rendus*,—Vol. XCVII, Nos. 1-5, 7-14.
- . *Revue Critique*,—Vol. XVI, Nos. 28-41, and Index to Vol. XV.
- . *Revue des Deux Mondes*,—Vols. LVIII, Nos. 2-4; LIX, 1-3.
- . *Revue Linguistique*,—Vol. XVI, Fasc. 3.
- . *Revue Scientifique*,—Vol. XXXII, Nos. 2-15.

BOOKS PURCHASED.

- BEAL, SAMUEL. *The Fo-Sho-Hing-Tsan-King. A life of Buddha by Asvaghosha Bodhisattva. Translated from Sanskrit into Chinese by Dharmaraksha, A. D. 420; and from Chinese into English. (Vol. XIX of F. Max Müller's "Sacred Books of the East".) 8vo. Oxford, 1883.*
- DARMESTETER, J. *The Zend-Avesta, Part II. (Vol. XXIII of F. Max Müller's "Sacred Books of the East".) 8vo. Oxford, 1883.*

- DAVIDS, T. W. RHYS; AND OLDENBERG, H. *Vinaya Texts, Part II* (Vol. XVII of F. Max Müller's "Sacred Books of the East"). 8vo. Oxford, 1882.
- DISTANT'S *Rhopalocera Malayana*. Part V. 4to. London, 1883.
- FALLON'S *New English-Hindustani Dictionary*,—Part XIV. 8vo. Benares, 1883.
- GOULD'S *Birds of New Guinea*. Part XIV. Fol. London, 1883.
- MARSHALL; AND DE NICEVILLE. *The Butterflies of India, Burmah and Ceylon*. Vol. I, Part 2. 8vo. Calcutta.
- SANDERS'S *Ergänzungs-Wörterbuch der deutschen Sprache*. Nos. 28-30. 4to. Berlin, 1883.
- SWEET, HENRY. *A Handbook of Phonetics, including a popular exposition of the principles of spelling reform*. 12mo. Oxford, 1877.
- TEMPLE, CAPT. R. C. *The Legends of the Punjab*. Nos. 1-4. 8vo. Bombay, 1883.
- TRYON'S *Manual of Conchology*, Part 19. 8vo. Philadelphia, 1883.
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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR DECEMBER, 1883.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 12th December, 1883, at 9 P. M.

The Hon'ble H. J. REYNOLDS, President, in the Chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From the British Museum,—(1) Catalogue of Birds, Vols. VII-VIII; (2) Catalogue of Persian Manuscripts, Vol. III.

2. From the Authors,—(1) A Geologist's Contribution to the History of Ancient India, by V. Ball; (2) Alphabetical Index to Mr. C. Marvin's Works and Translations, No. II, prepared by Major W. E. Gowan; (3) Sanskrit Wörterbuch in kürzerer Fassung, Part IV, No. 2, by O. Böhtlingk; (4) A Dissertation on the Proper Names of the Panjâbîs, by Captain R. C. Temple.

3. From the Leyden University,—Catalogue des Livres Chinois.

4. From the Meteorological Reporter to the Government of India,—Report on the Administration of the Meteorological Department of the Government of India, in 1882-83.

5. From the Department of Public and Private Instruction, Churches and Industry, Batavia,—Minhadj at-Tâlibîn, Vol. II, by L. W. C. van den Berg.

6. From the Muséum des Sciences Naturelles, Lyon,—Rapport, No. XI.

7. From the Home Department,—Archæological Survey Reports, Vol. XVI.

8. From the Royal Society of London,—Catalogue of the Scientific Books in the Library of the Royal Society, Part II, General Catalogue.

9. From the Zoological Society of London,—List of Vertebrated Animals now or lately living in the Gardens of the Zoological Society of London, Eighth Edition.

10. From the Officer in Charge, Tidal and Levelling Operations, Survey of India,—(1) Tide Tables for the Indian Ports for 1884; (2) Tide Tables for the River Hooghly for 1884 (sheet and pamphlet).

11. From Dr. Ram Das Sen,—Dosa Sandarshani, by Gangadhar Raya Kaviratna Kaviraj.

12. From the Royal Zoological Society of Amsterdam,—De Toerako's afgebeeld en beschreven door H. Schlegel onder medewerking van G. F. Westerman.

In drawing special attention to Mr. Ball's pamphlet, entitled "A Geologist's Contribution to the History of India," the NATURAL HISTORY SECRETARY said—

Professor Ball has in this pamphlet attempted to identify the sources whence the mineral productions mentioned by the historians of India, from the earliest times to the close of the eighteenth century, were derived. Since his departure from India, the rich library of Trinity College, Dublin, has enabled him to add considerably to the facts which had been collected by him in this country and communicated to the Asiatic Society in several papers published in the *Journal*. Mr. Ball has placed within the reach of historians a number of facts that serve to elucidate several subjects hitherto puzzling to those unacquainted with the results which have been arrived at by the systematic examination of the Geology of India. The conclusions which he draws are:

1. The great antiquity of the knowledge possessed by the natives of India with reference to certain metallurgical processes, is, Mr. Ball thinks, fairly established. The most notable of these is, undoubtedly, that by which *wootz* or cast steel was manufactured. Probably the method of refining gold which is mentioned in the *Ain-i-Akbari* is also very old; but we have no earlier record of it. Mr. Ball questions the accuracy of a statement made by Strabo, or at least its applicability even in his time to the whole of India, where he says, "The Indians, unacquainted with mining and smelting, are ignorant of their own wealth."

2. Many ancient long-forgotten mines, of which the names alone have survived in more or less archaic garbs, have, by the methods here adopted, been identified with modern sites. In most of these cases geological evidence has established these conclusions, and in some instances they have been further ratified by local traditions acquired as the result of personal inquiries.

3. Several fables of world-wide notoriety have been shown to have

had their origin in *facts* connected with customs which were formerly little understood, but, being still in practice, are now susceptible of close examination and explanation.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members :

I. Lieutenant T. S. Boileau.

2. Otto Chrestien Rehling Möller, Esq.

The following gentlemen are candidates for election at the next meeting :

Dr. G. Bidie, Superintendent, Government Central Museum, Madras, proposed by Dr. Anderson, seconded by H. F. Blanford, Esq.

Babu Rai Sohun Lall, proposed by Moulvi Kabiruddin Ahmad, seconded by Dr. H. W. M'Cann.

The following gentlemen have expressed their desire to withdraw from the Society :

C. J. Sharpe, Esq.

Babu O. C. Dutt.

The PRESIDENT announced that, in accordance with Rules 37 and 38 of the Society's Byelaws, the names of the following gentlemen had been posted up as defaulting members since the last Monthly General Meeting, and would now be removed from the List of Members, and that their removal would be notified in the Proceedings :

Dr. Krishna Dhana Ghosha.

Dr. E. Lawrie.

The PRESIDENT announced that it was proposed to celebrate the 100th anniversary of the Society's first meeting by a Centenary Meeting, on the 15th January, 1884, at which six special Centenary Honorary Members would be elected, and that it was also proposed to further celebrate the anniversary by a subscription dinner to be given in the Society's rooms, at which it was hoped that H. E. the Viceroy, as Patron of the Society, would be present.

The following papers were read—

1. *A collection of Folksongs from Ghazipur.*—Collected by BABU JOGEN-DEANATH RAI. Contributed by W. IRVINE, C. S.

This will be published in the Journal, Part I.

The PRESIDENT, in calling upon Dr. Hoernle to read the next paper, said that a melancholy interest attached to the paper now to be read, as its author had lately been removed by a sudden and violent death. Mr. de

Roepstorff was well known to them all as a constant and valued contributor to the Society, and it would be remembered that only last year he had been elected an Associate Member, on the recommendation of the Council, as an acknowledgment of the good work he had done. He had now fallen by the hand of an assassin, the murderer being a havildar under his command, who apparently wished to revenge himself for some punishment which it had been found necessary to inflict upon him. He (the President) was sure he had the concurrence of the meeting in expressing his sense of the loss the Society had sustained by Mr. de Roepstorff's death.

2. *Translation of a Nicobarese Tale.*—By F. A. DE ROEPSTORFF.

(Abstract.)

Both racial characteristics and the historical traditions of a people are commonly found embedded in their religious rites and in their popular tales. This is especially true in the case of uncivilised tribes. Mr. de Roepstorff has therefore, while pursuing his studies in the Nicobar language with the object of reducing it to writing, made it a point to note down the characteristic religious usages of the Nicobarese and also to chronicle the tales in vogue amongst them. Mr. de Roepstorff has prepared a paper on the funeral rites and ceremonies of the Nicobarese, and he has no difficulty in discovering the meaning and significance of these rites, but he finds the case is very different with regard to any historical references and traditions that may be hidden in the tales of the Nicobarese. He ascribes this difficulty to a most singular custom which prevails among the people which must effectually hinder the "making of history" or at any rate the transmission of historical narrative. By a strict rule which has all the sanction of Nicobarese superstition no man's name may be mentioned after death. To such a length is this custom followed that when, as is frequently the case, the man's name happens to be the Nicobarese equivalent for such words as Fowl, Hat, Fire, Road, &c., the use of these words is carefully eschewed for the future not only in their particular sense as being the personal designation of the deceased, but even as the names of the articles they represent. The words die out of the language and either new words are coined in their place, or substitutes for the disused words are found in other Nicobarese dialects or in some foreign language. Owing to this very peculiar custom it is not to be expected that much can be gathered from their tales as to the past history of this people. Still they are, as a rule, worth preserving, for they exhibit traces of religious ideas which prevailed in former times, of great conflicts and of Nicobarese humour. It is possible that the Tale of Tiomberombi may be of foreign, perhaps of Malay, origin. If so, it must have been introduced generations ago, for it now abounds with the peculiarities which characterise the Nicobarese people

and has been wholly adopted as their own. The plot of the story is simple enough. The two points of interest in it are the magical powers exercised by the hero and the introduction of animals talking. Mr. de Roepstorff has given the Nicobar text transliterated into English characters and as literal a translation as possible, with some explanatory and critical notes.

This paper will be published in full in the Journal, Part I.

3. *The Town of Bulandshahr.*—By F. S. GROWSE, M. A., C. S., C. I. E.

This paper will be published in full in the Journal, Part I.

4. *Memorandum on a couple of stones found in the Cumbum Taluq of the Kurnul District, Madras.*—By J. W. PARRY, Assoc. Mem. Inst. C. E.

From June to August of the present year, a large Enquirer's Camp was formed near the 75th mile of the Nandiol-Cumbum Road, at a place called Digametta. The object was a survey for a Railway through the Nandicanameh pass of the Nala Malla Hills. Soon after joining the camp, the author was shewn a couple of stones bearing inscriptions lying in the camping ground. He was just in time to prevent the inscription of the smaller stone from being totally obliterated, as one of the lascars had utilized its flat surface for grinding his curry powder, and hence several words could not be deciphered: these are shewn in asterisks.

There is no village at the camping ground, but a temple once existed, as there is a large bowl, some ruins, and a couple of pieces of sculpture.

At page 98 of Mr. Sewell's "Madras Antiquarian Remains" under the head "Krishnamsettipalle," it is stated, "Five miles west of the village are 2 stones bearing inscriptions. Both are illegible." As Digametta is about 5 miles west of Krishnamsettipalle, there can be no doubt that these are the identical stones referred to. It is, however, due to Mr. Sewell to state that at page I, Vol. I, he commences by saying—

"I am confident, in the case of very many of the inscriptions so characterized [as illegible], a skilled epigraphist will find no difficulty in deciphering them.

The First Stone,

is nearly circular, having a diameter of 3 feet 2 inches. Thickness varies from 5 in. to 8 in. It is of quartzite, and the letters are very distinct, about 1 inch in height and $\frac{1}{16}$ th in depth. The masons who cut the inscriptions must have had fine and hard stone chisels as we know that quartzite has a tendency to fly irregularly. The surface of the stone is so uneven that it is impossible to take off good copies of the inscriptions; one copy, however, was sent to Mr. Sewell who was asked to state the probable date. Mr. Sewell replied that he regretted he was unable to give the subject any attention as he was just about to proceed to England on leave.

Top.

A copy of the inscription in the original characters will be found in the Appendix: * the English translation is as follows:—

- [1.] ? It is granted.
- [2.] Tan. the ceremony of clothing, adorning etc., of the idol.
- [3.] To perform properly.
- [4.] Who is the son of
- [5.] In the year.....in the month of August and September, light fortnight, the son of Basava.
- [6.] Who is the Lord of the Town.
- [7.] Who is the worshipper of the lotus-like feet of the god of the town.
- [8.] Those that go walking in the mountain pass (called) Nandicanamah.
- [9.] The platform at the gate of the Golden Feet of the god.
- [10.] Having searched in the midst of the great portico, shining beautifully.
- [11.] The son of the Great Tadava kings caused the order to be given.
- [12.] In the mountain pass of Nandi (all) those that carry without fail.
- [13.] Every year for land given
- [14.] Cotton,
- [15.] As we gave, (you go on)
- [16, 17, 18, 19.] enjoying the gift as long as the sun and moon shall continue, if our order be violated here (they) will (surely) have the sin of killing a cow at the Ganges.

Bottom.

- [1.] In the year of Yura (?)
- [2.] In the month of March, happily having all his names, he who is the God of great gods.
- [3.] Cows that go in the mountain pass of Nandi.
- [4.] All (those who) known from the beginning to the end.
- [5.] A retinue of heroes in the portico of the Great Invincible God Bhadra.
- [6.] Who is to be worshipped having adorable names.
- [7.] Order given for the god Bhadra, for oblation consisting of boiled rice to the god Virabhadra.
- [8.] For ceremonies for adorning, clothing, etc., of the idol (the following) are the items prescribed: in the mountain pass of Nandi.
- [9.] One rukha for every bullock carrying corn (in the mountain pass).
- [10.] One rukha for nuts and cotton.....

* The three inscriptions in Mr. Parry's paper are published separately in an Appendix, as no Press in Calcutta possessed the requisite type, and it was found necessary to get them printed in Madras.—*Ed.*

- [11.] One rukha for each of these, namely coins
 [12.] As we gave, to last as long as the sun and moon.
 [13, 14.] If the order be violated even by a line then the sin of killing cows on the banks of the Ganges.
 [15, 16.] (Cannot be made out)
 [17.] By order of Panimappa son of Rama.
 [18.] Subhadramallama
 [19.] A deed of gift protecting the request of Subhadramallama.

Note.

The author is indebted to Mr. M. Sheshagiri Shastri, Professor of Sanskrit and Telugu at the Presidency College, Madras, for the above translation. Several pandits and munshis have endeavoured to make an English translation, but could only succeed in giving the purport of the inscription. Mr. Shastri requests, however, that it may be stated that the forms are very archaic, and he believes there have been errors in copying, so that he will not guarantee the absolute accuracy of the translation unless he first of all sees the original stone or photographs of it.

One rukha was probably equal to 1 anna 3 pies. In Sewell's 'Dynasties of Southern India' no such king as Panimappa is mentioned, but possibly Singhana II, 1209—1247 A. D., is meant, because he "claims to have conquered the king of Telunga (Telingana)," and is sometimes called Tribhuvanamalla; and also because there are "38 inscriptions of his reign extant which prove that the kingdom had extended in size."

The Second Stone

is rectangular, being 3 feet 1 inch by 1 foot 8½ inch. The thickness varies from 10 inches to 13 inches. The stone would weigh about 9½ maunds. It is probably quartzite but looks like a fine-grained sandstone. The formation of the letters of this stone is totally different from that of the first stone, and the words too are more difficult, being chiefly Sanskrit written in Telugu character.

It is therefore certain that some other individual wrote this inscription, but as the purport is the same, *viz.*, the violation of the order being equal to the sin of killing a cow on the banks of the Ganges, and as the same dynasty of the Yadavas is referred to, it is probable that the dates are contemporaneous.

A copy of the inscription in the original Telugu characters will be found in the Appendix.

Mr. Shastri is unable to decipher the first 5 lines, but submits the following as an approximate translation of the remainder.

- [5.] The dynasty of Yadu.
 [6.] The moon of that dynasty—the sun and the moon.

[7.] Who belong to the dynasty (of the sun and the moon).

[8.] ?

[9.] Having killed a Brahmin on the banks of the Ganges.

[10.] Having killed a cow (on the banks of the Ganges).

[11, 12.] ?

The Nandial-Cumbum cartroad is made through the Nandicanamah pass and probably followed the identical path referred to in these inscriptions.

5. *A Classified and Detailed Catalogue of the Gold coins of the Imperial Gupta Dynasty of Northern India. With an Introductory Essay.*—By VINCENT A. SMITH, B. A., (Dubl.), B. C. S. (with 4 Plates and a Table of weights).

(Abstract)

This communication consists of two parts, an Introductory Essay, and a Detailed Catalogue.

The Introductory Essay is divided into seven sections, and discusses generally the gold coinage of the imperial Gupta dynasty, which terminated with Skanda Gupta. The imitative barbarous issues are noticed as briefly as possible. The coins are divided, with reference to characteristic obverse devices, into 18 types. The reverse devices are grouped under nine heads, and an attempt is made to investigate the origin and meaning both of obverse and reverse devices. On some points the writer ventures to differ from the opinions commonly held. The relation of the so-called monograms to the similar marks on the Indo-Scythian coins is examined. It is shown that the Indo-Scythian and Gupta 'monograms' are probably neither the marks of mint cities, nor of functionaries, and that the Gupta monograms are not mere imitations of the Indo-Scythian ones; and the hypothesis is proposed that all the monograms on both series of coins should be regarded as religious symbols of meaning at present unknown.

The subject of weights is treated in detail, and discussed at length, the weightments of 165 coins being tabulated and analysed. The general result is that the undisputed coins of the imperial Guptas appear to have been coined according to three standards of weight, *viz.*,

Ghatot Kacha, Chandra Gupta I, Samudra Gupta, and Chandra Gupta II (<i>except wheel variety of Archer type</i>)	about	125	grs.
Kumâra Gupta Mahendra	„	130	„
Skanda Gupta, and wheel variety of Chandra Gupta II	„	134	„

The coins of barbarous type, such as those of Nâra Gupta, were struck on a different standard, which appears to have been about 146 grains. These last coins are regarded as revivals of the ancient *suvarna*, the weight of the *ratî* being assumed as 1.825 grain.

All available information respecting the find-spots or *provenance* of the

Gupta gold coins is collated and tabulated, with the result that the overwhelming majority of the coins, concerning the locality of which anything is known, are shown to come from the eastern parts of Oudh and the North West Provinces or from Bengal. Only five or six specimens can be traced to Kanauj, while about 470 (excluding rude barbarous coins) are known to come from eastern districts.

As an inference from this result, and from the evidence of the Purānas and of the distribution of architectural remains, and for other reasons, the conclusion is reached that Kanauj was not, as is usually supposed, the Gupta capital, and arguments are adduced for believing that Patna (Pāṭaliputra) *may* have been the capital and chief mint city, which *must* have been situated east of Kanauj.

The Catalogue comprises notices of all the published coins of the series discussed, and of all the specimens of the same in the collections of the British Museum, India office, Asiatic Society of Bengal, Sir E. C. Bayley, A. Grant, Esq., W. Theobald, Esq., J. Hooper, Esq., and General Cunningham, and of a few other coins, including some of those in the Bodleian collection.

Each type is defined by a full general description, which is followed by definitions of the several varieties, and by brief particulars of individual coins. Questions of disputed attribution and the like are discussed as occasion arises.

The catalogue exhibits a fulness of detail which would be out of place in a treatise on European coins, but, in consideration of the position which numismatic evidence must take in the reconstruction of the ancient history of India, the writer has thought it desirable not to suppress details. Every reader has thus the opportunity of examining for himself the evidence on which the opinions expressed are based. The fulness of detail has the further advantage of giving information, for the first time, as to the relative rarity of the various types and varieties, and as to the deficiencies in the public collections.

The coin plates have been prepared by the Autotype Company from plaster casts of coins in the British Museum and India office collections, and, so far as the incompleteness of the series in those cabinets permitted, one coin at least of each type has been figured. The opportunity has been taken of figuring some hitherto unpublished varieties of well-known types. The writer is much indebted to the officials of the Coin Room in the British Museum for the permission to have casts taken of as many coins as he might desire, and to Mr. J. R. Sawyer, Director of Works of the Autotype Company, for the skill and care bestowed on the production of the plates. The assistance received from other gentlemen is duly acknowledged in the concluding section of the Introductory Essay.

This paper will be published in full in the Journal, Part I.

LIBRARY.

The following additions have been made to the Library since the Meeting held in November last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

- Allahabad. Punjab Notes and Queries,—Vol. I, No. 2.
- Baltimore. Johns Hopkins University,—American Chemical Journal, Vol. V, No. 4.
- Batavia. Bataviaasch Genootschap van Kunsten en Wetenschappen,—Notulen, Vol. XXI, No. 2.
- . ———. Tijdschrift,—Vols. XXVIII, No. 6, XXIX, No. 1.
- Berlin. K. preuss. Akademie der Wissenschaften,—Sitzungsberichte, Nos. 22-37.
- Bombay. Indian Antiquary,—Vol. XII, No. 150, November, 1883.
- Bordeaux. Académie Nationale des Sciences, Belles-Lettres et Arts,—Actes, Vols. XL (Supplément), 1878, and XLII, 1880.
- . Société de Géographie Commerciale,—Bulletin, Nos. 20-21, 1883.
- Bruxelles. Académie Royale des Sciences, des Lettres et des Beaux-Arts,—Annuaire, 1882-1883.
- . ———. Bulletins,—Vols. I-V (3rd Series), and Index to Vols. XXI-L (2nd Series).
- . ———. Mémoires,—Vols. XLIII, Part 2, and XLIV.
- . ———. Mémoires Couronnés,—Vols. XXXI, XXXIII-XXXV.
- . ———. Mémoires des Savants E'trangers,—Vols. XLIV-XLV.
- Calcutta. Geological Survey of India,—Records, Vol. XVI, Part 4.
- . Original Meteorological Observations, March to May, 1883.
- Copenhagen. K. Nordiske Oldskrift-Selskab,—Aarboger, Parts 2-4, 1878, Part 1, 1880.
- . ———. Mémoires,—1882-1884.
- . ———. Tillæg,—1875.
- Florence. Società Italiana di Antropologia, Etnologia e Psicologia Comparata,—Archivio per l' Antropologia e la Etnologia, Vol. XIII, Fasc. 2.
- Königsberg. Schriften der Physikalisch-Oekonomischen Gesellschaft,—Vol. XXIII, Parts 1-2.
- Labore. Anjuman-i-Punjab,—Journal, Vol. III, Nos. 45-49.
- Leipzig. Deutsche morgenländische Gesellschaft,—Zeitschrift, Vol. XXXVII, No. 2.

- Lisbon. Sociedade de Geographia,—Boletim, 4th Series, No. 1.
- London. Academy,—Nos. 598-602.
- . Athenæum,—Nos. 2921-2925.
- . Institution of Civil Engineers,—Minutes of Proceedings, Vol. LXXIII.
- . ———. List of Members.
- . Linnean Society,—Botany, Journal, Vols. XIX, Nos. 122; XX, 123-129.
- . ———. ———. Transactions,—Vol. II (2nd Series), Parts 2-5.
- . ———. Zoology,—Journal, Vols. XVI, Nos. 95-96; XVII, 97-100.
- . ———. ———. Transactions,—Vol. II (2nd Series), Parts 6-8.
- . ———. Proceedings, November to June, 1882.
- . ———. List of Members, 1881-1882.
- . Nature,—Vols. XXVIII, Nos. 729-730; XXIX, 731-733.
- . Royal Geographical Society,—Proceedings, Vol. V, Nos 9-10.
- . Royal Microscopical Society,—Journal, Vol. III (2nd Series), Part 5.
- . Royal Society,—Proceedings, Vol. XXXV, No. 226.
- . ———. Philosophical Transactions,—Vols. CLXXIII, Parts 3-4; CLXXIV, 1.
- . ———. List of Members, 30th November, 1882.
- . Society of Telegraph-Engineers,—Journal, Vol. XII, No. 49.
- . ———. List of Members, 30th June, 1883.
- . Zoological Society of London,—Proceedings, Part 3, 1883.
- . ———. Transactions,—Vol. XI, Part 9.
- Lyon. Muséum d' Histoire Naturelle,—Archives, Vol III.
- . Société d' Anthropologie,—Bulletin, Vol. I, No. 2.
- . Société de Géographie,—Bulletin, Vol. III, No. 4.
- Melbourne. Royal Society of Victoria,—Transactions and Proceedings, Vol. XIX.
- München. Repertorium der Physik,—Vol. XIX, No. 10.
- Paris. Société d' Anthropologie,—Bulletin, Vol. VI, Fasc. 3.
- . Société de Géographie,—Bulletin, Vol. IV (7th Series), No. 3.
- . Société Zoologique,—Bulletin, Part 4, 1883.
- Pisa. Società Toscana di Scienze Naturali,—Atti, Processi Verbali, Vol III, pp. 274-292.
- Rio de Janeiro. Museu Nacional,—Archiv, Vols. IV-V.
- Rome. Società degli Spettroscopisti Italiani,—Memorie, Vol. X, No. 10.
- St. Petersburg. Hortus Petropolitanus,—Acta, Vol. VIII, Fasc. 2.

St. Petersburg. Académie Impériale des Sciences,—Memoires, Vol. XXXI, Nos. 3-4.

Simla. United Service Institution of India,—Journal, Vol. XII, No. 56.

Vienna. Ornithologische Verein,—Mittheilungen, Vol. VII, Nos. 8-10.

Washington. Smithsonian Institution,—Miscellaneous Collections, Vols. XXII-XXVII.

BOOKS AND PAMPHLETS,

presented by the Authors, Translators, &c.

BALL, VALENTINE. A Geologist's Contribution to the History of Ancient India, being the Presidential address to the Royal Geological Society of Ireland. 8vo. Dublin, 1883.

BÖHTLINGK, O. Sanskrit Wörterbuch in kürzerer Fassung. Vierter Theil, zweite Lieferung. 4to. St. Petersburg, 1883.

GOWAN, MAJOR W. E. Alphabetical Index to Mr. C. Marvin's works and translations. No. 2. 8vo.

TEMPLE, CAPT. R. C. A dissertation on the Proper Names of Punjâbîs, with special reference to the proper names of villages in the Eastern Punjab. Fcp. Bombay, 1883.

MISCELLANEOUS PRESENTATIONS.

Report on the Land Revenue Administration of the Lower Provinces for 1882-83. Fcp. Calcutta, 1883.

Report on the Administration of the Registration Department in Bengal for 1882-83. Fcp. Calcutta, 1883.

Report on the Census of Bengal, 1881. Vols. I-III. Fcp. Calcutta, 1883.

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BENGAL GOVERNMENT.

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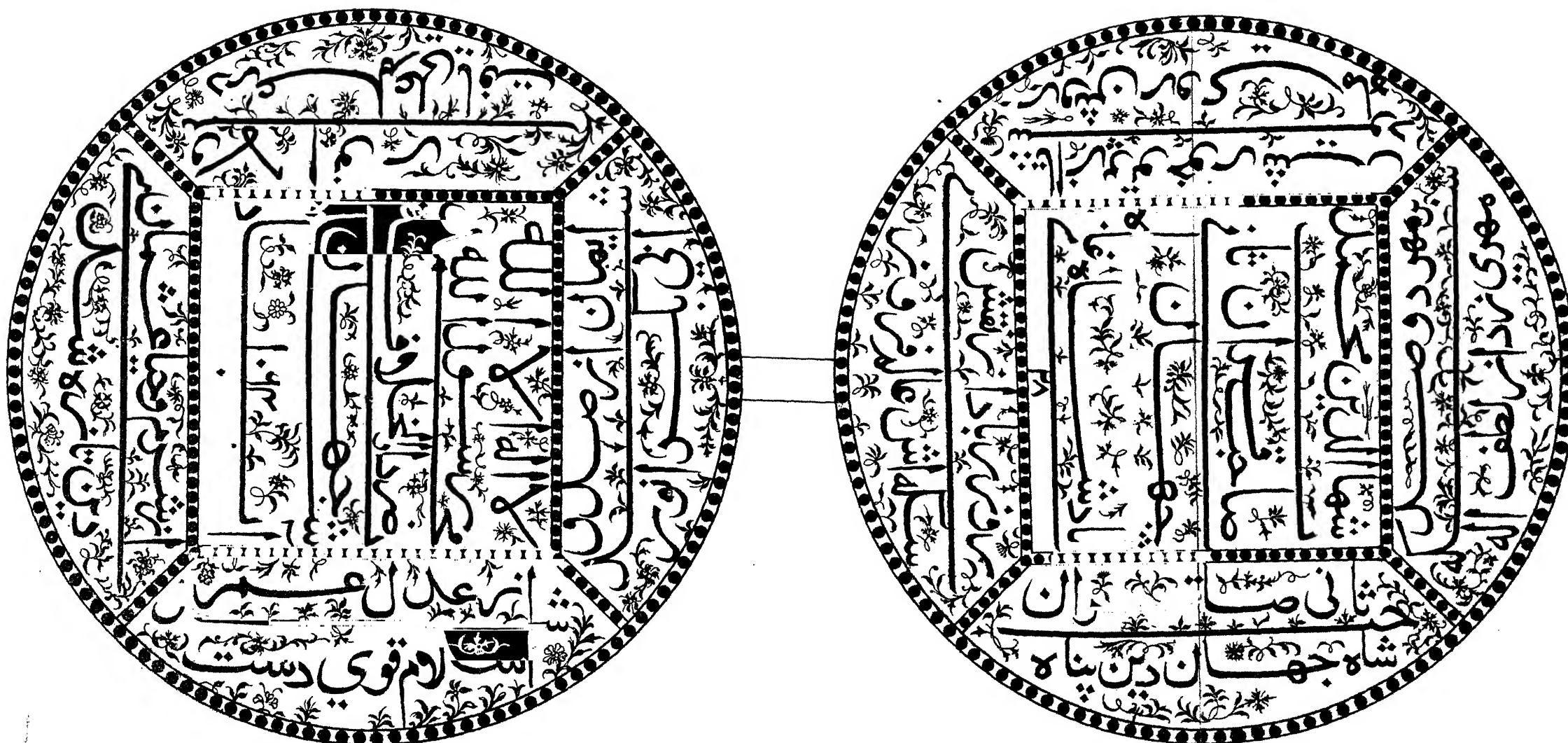
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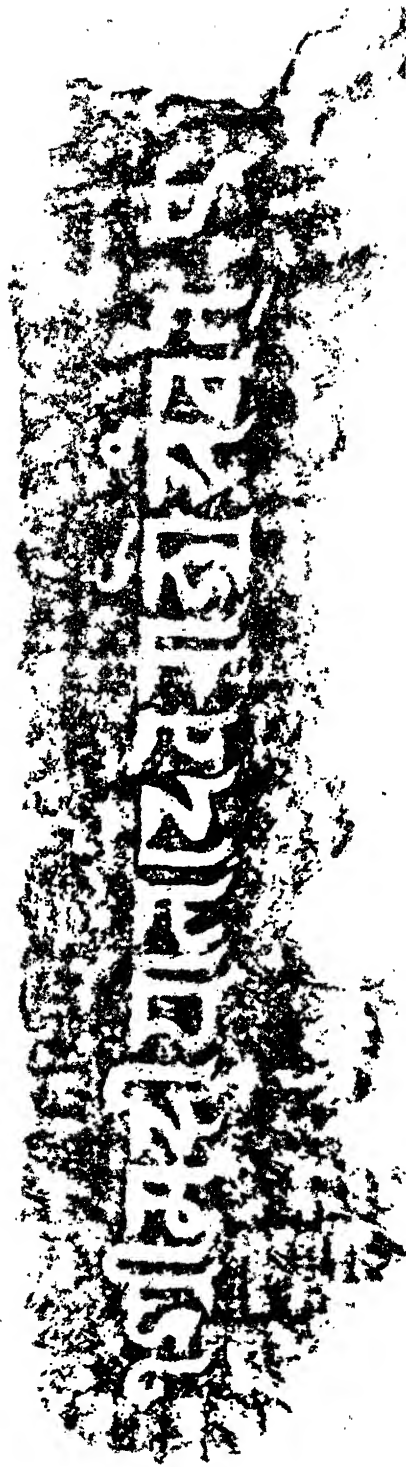
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FACSIMILE DRAWING OF A 200 GOLD MOHUR PIECE OF SHAH JEHAN.



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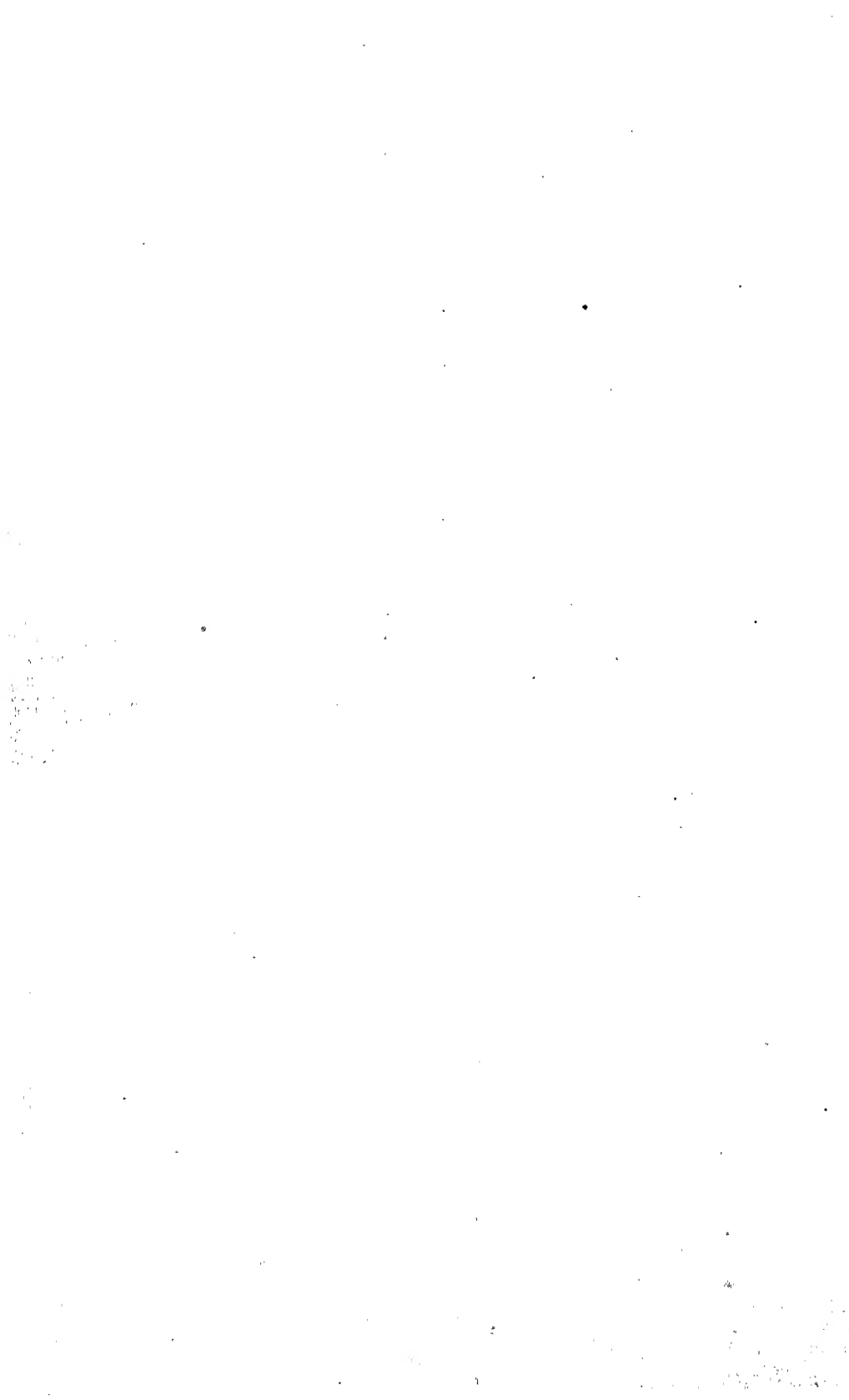
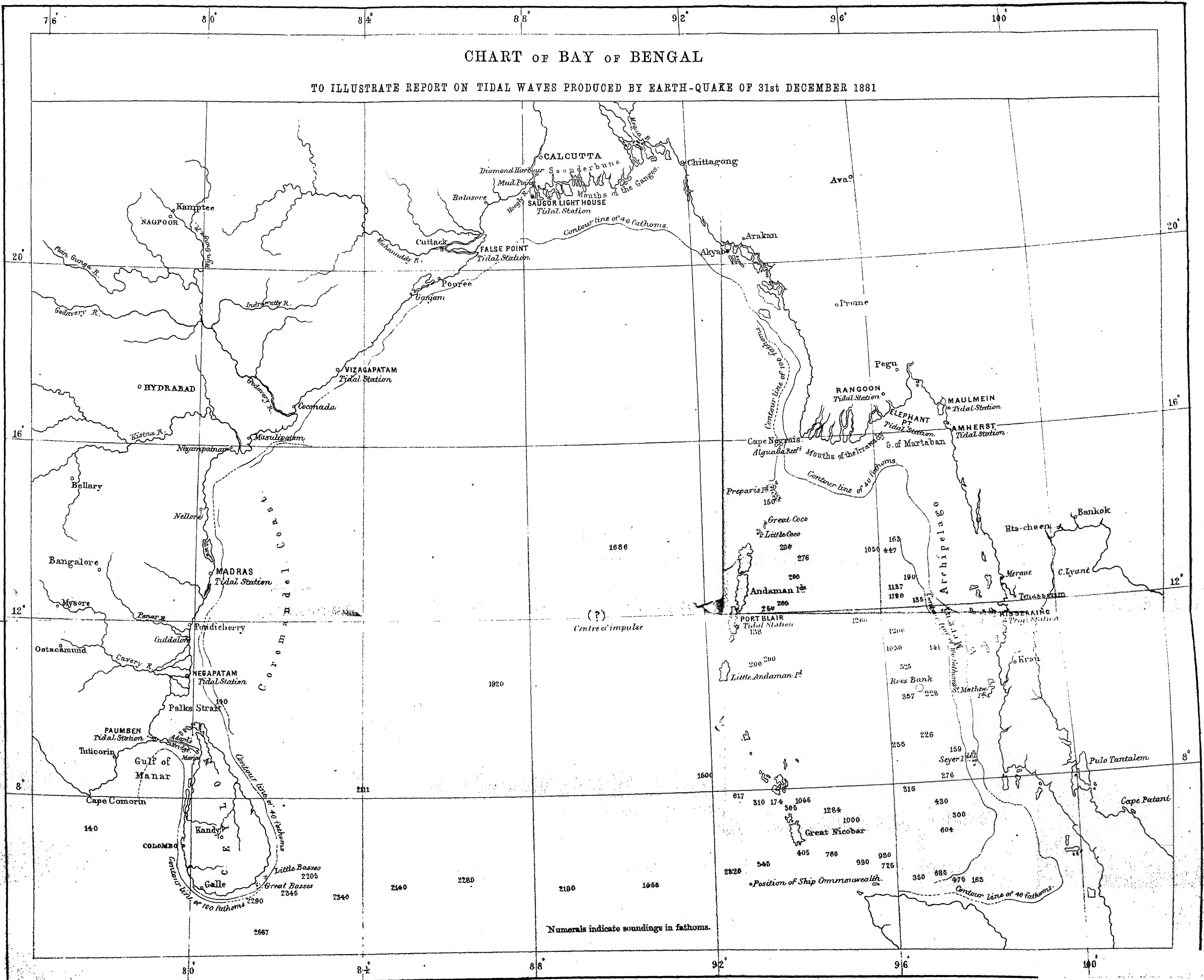


CHART OF BAY OF BENGAL

TO ILLUSTRATE REPORT ON TIDAL WAVES PRODUCED BY EARTH-QUAKE OF 31st DECEMBER 1881



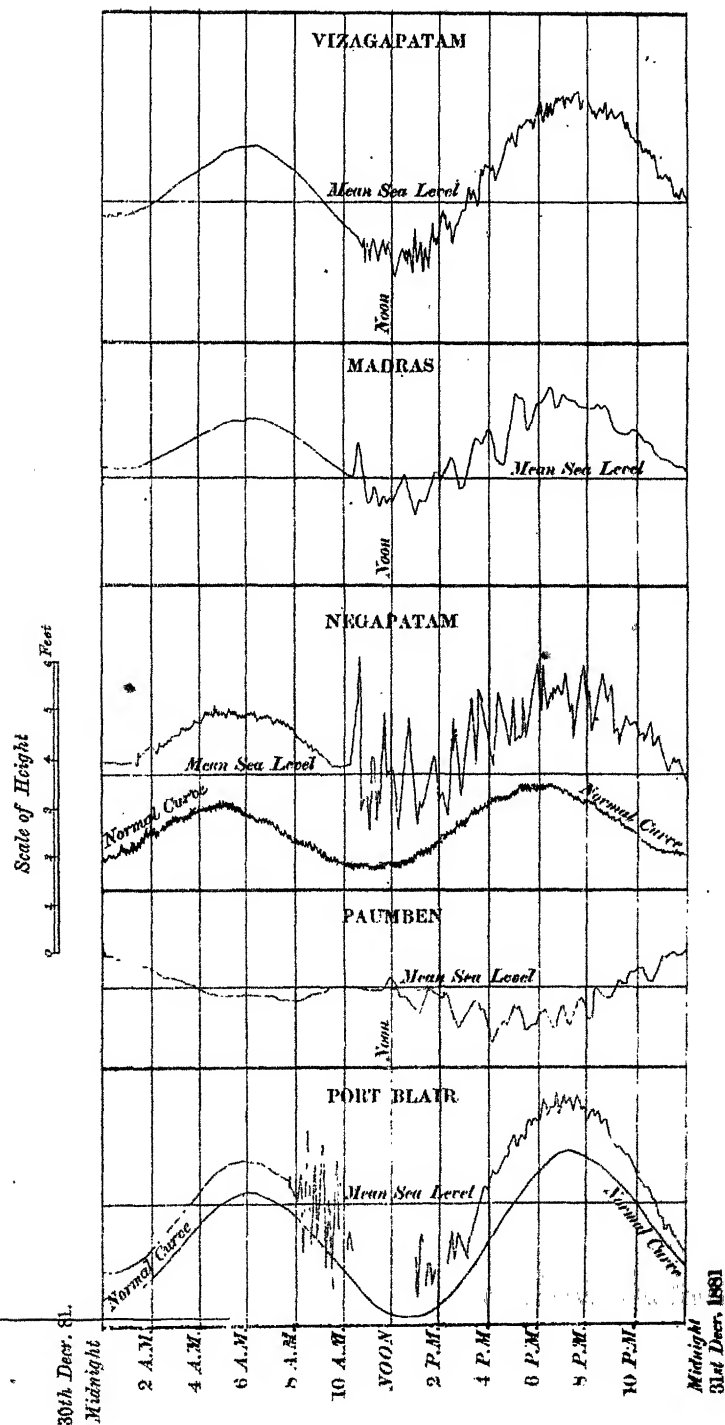
Numerals indicate soundings in fathoms.

TIDAL CURVES

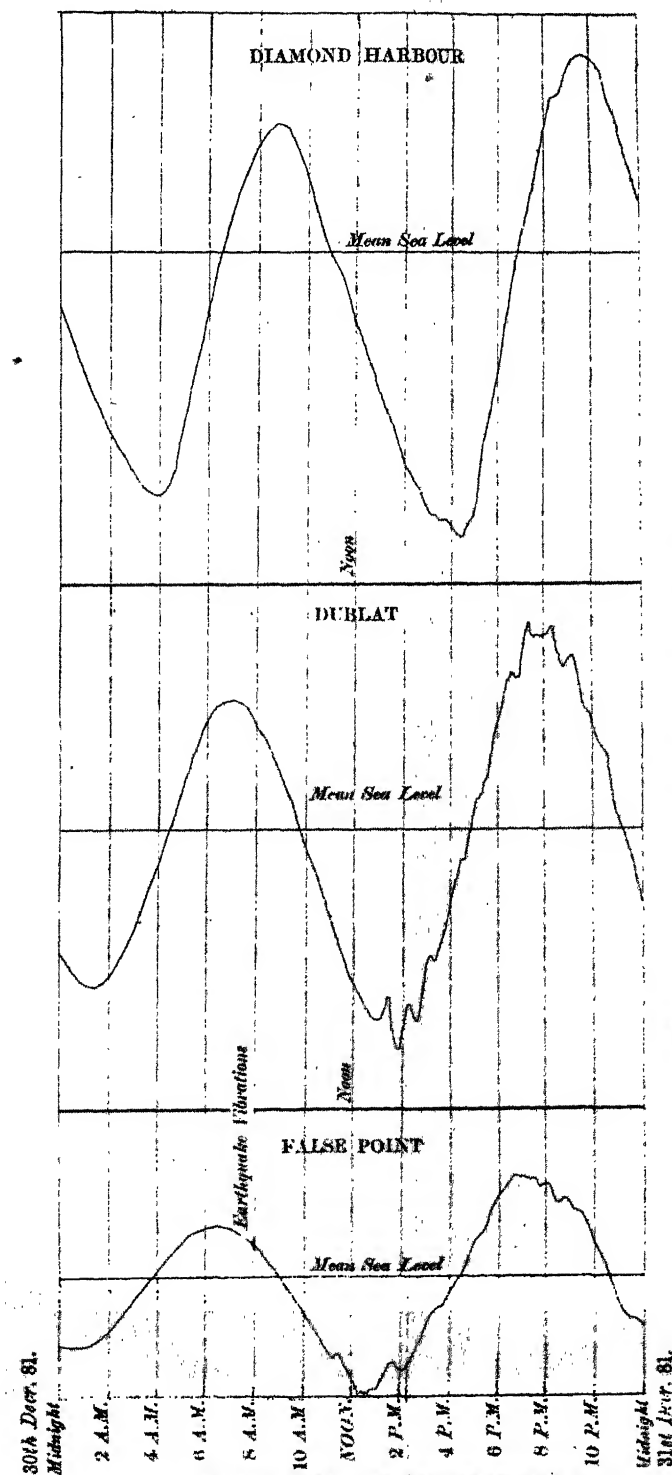
Proc. As. Soc. Bengal, 1883.

To illustrate the effects of the Earthquake of the 31st December, 1881.

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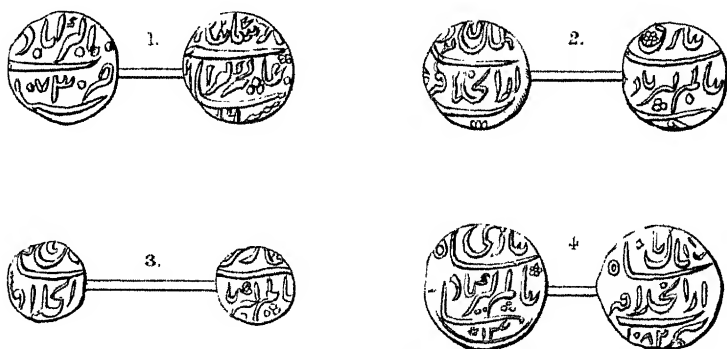


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0 1 2 3 4 5 6 7 8 9 10 11 12 Hours



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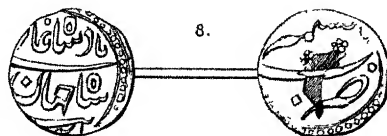
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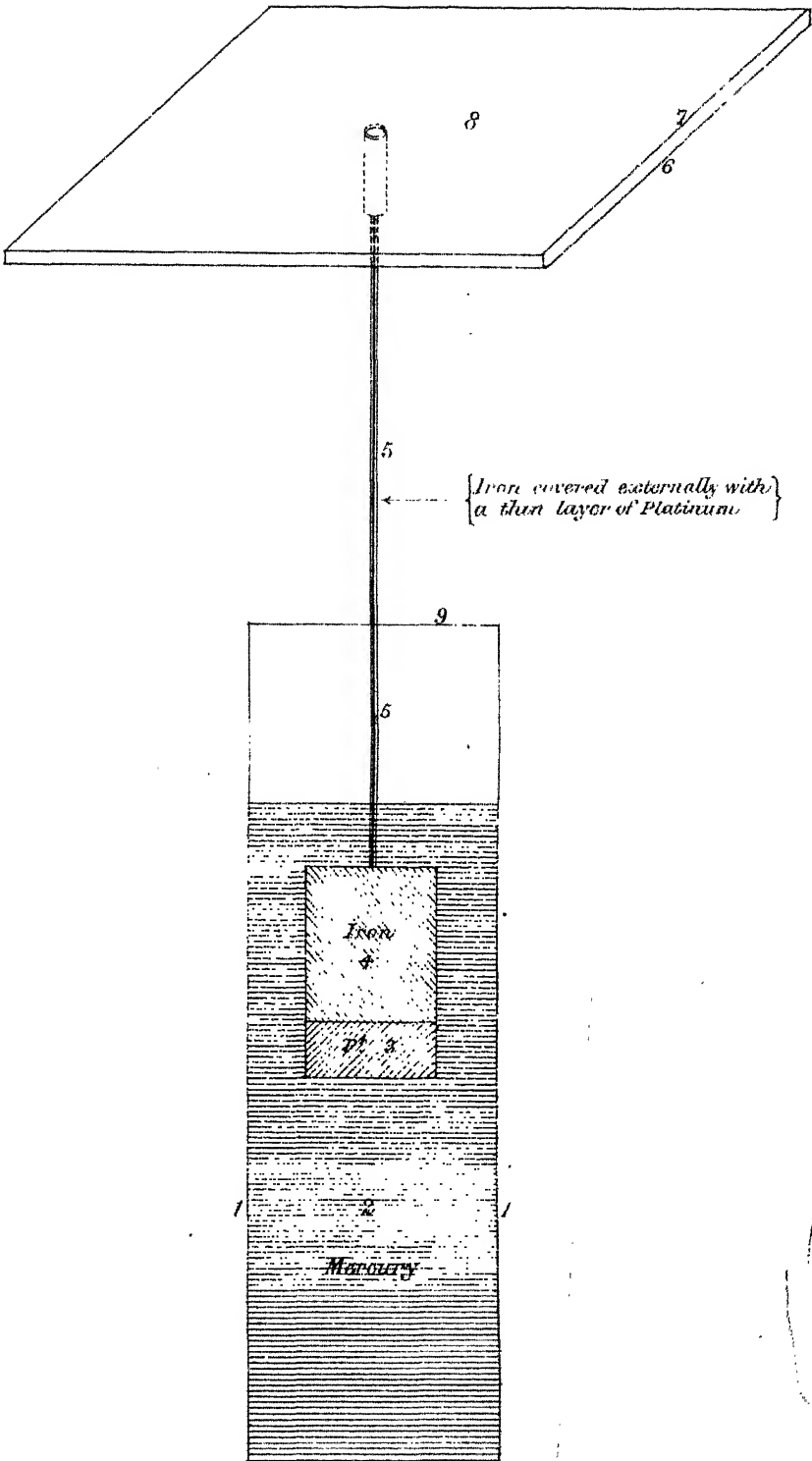
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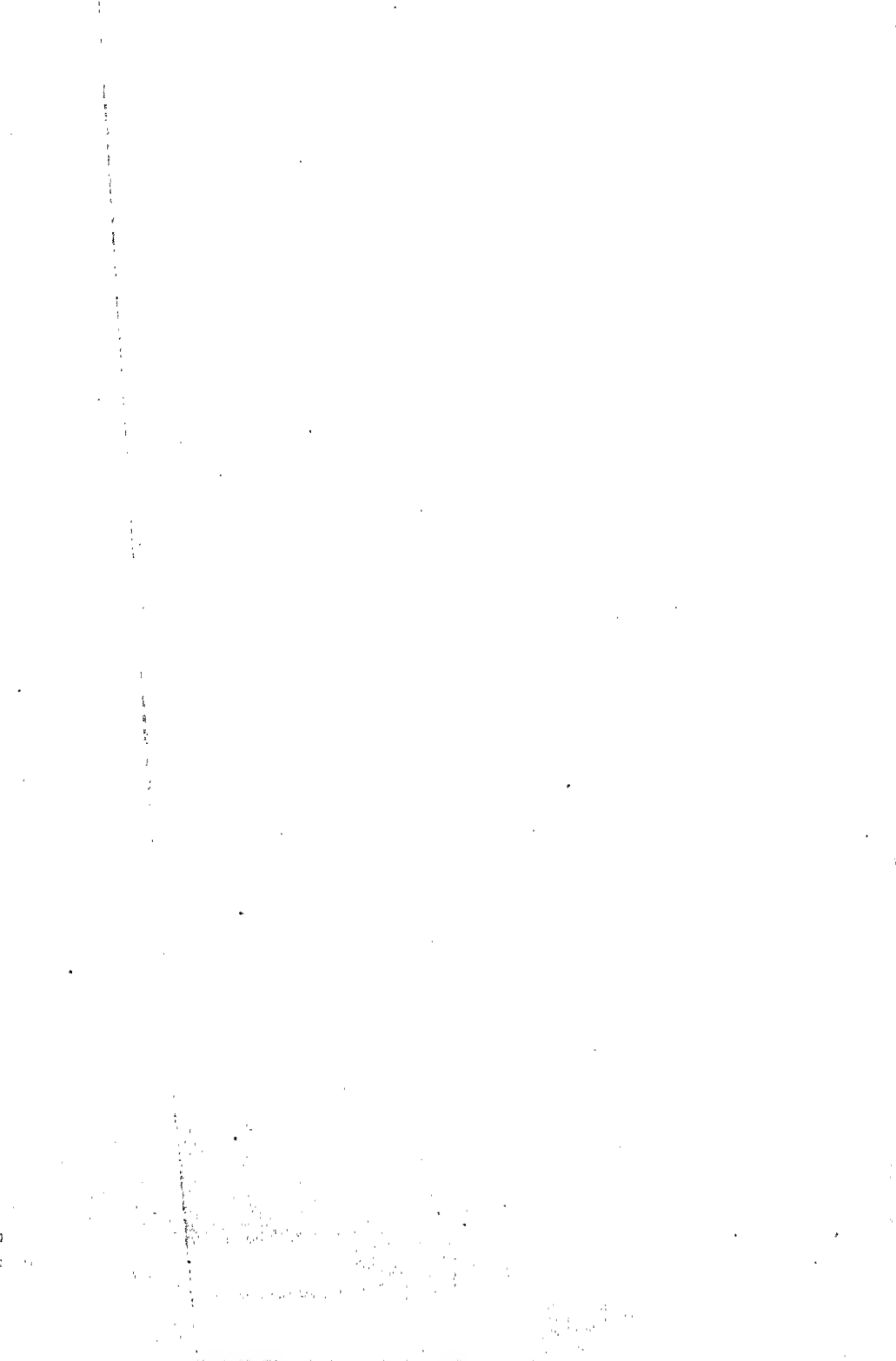
5 — 7, *Shāh Jehāngīr*.



8 *Shāh Jehān*.



INSTRUMENT FOR DETERMINING THE DEW-FALL



I N D E X

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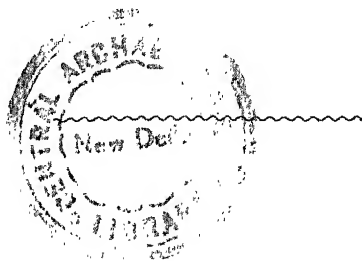
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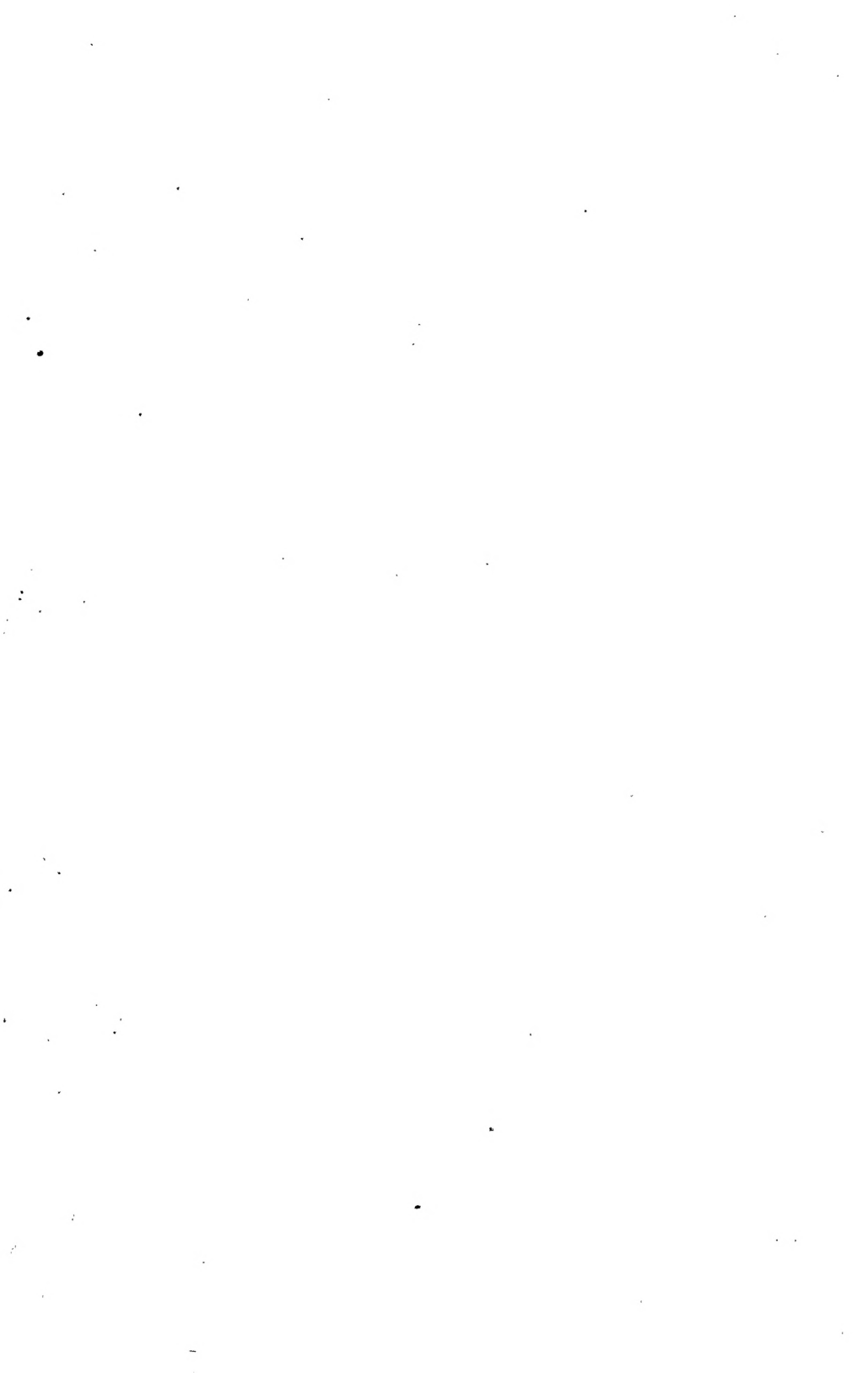
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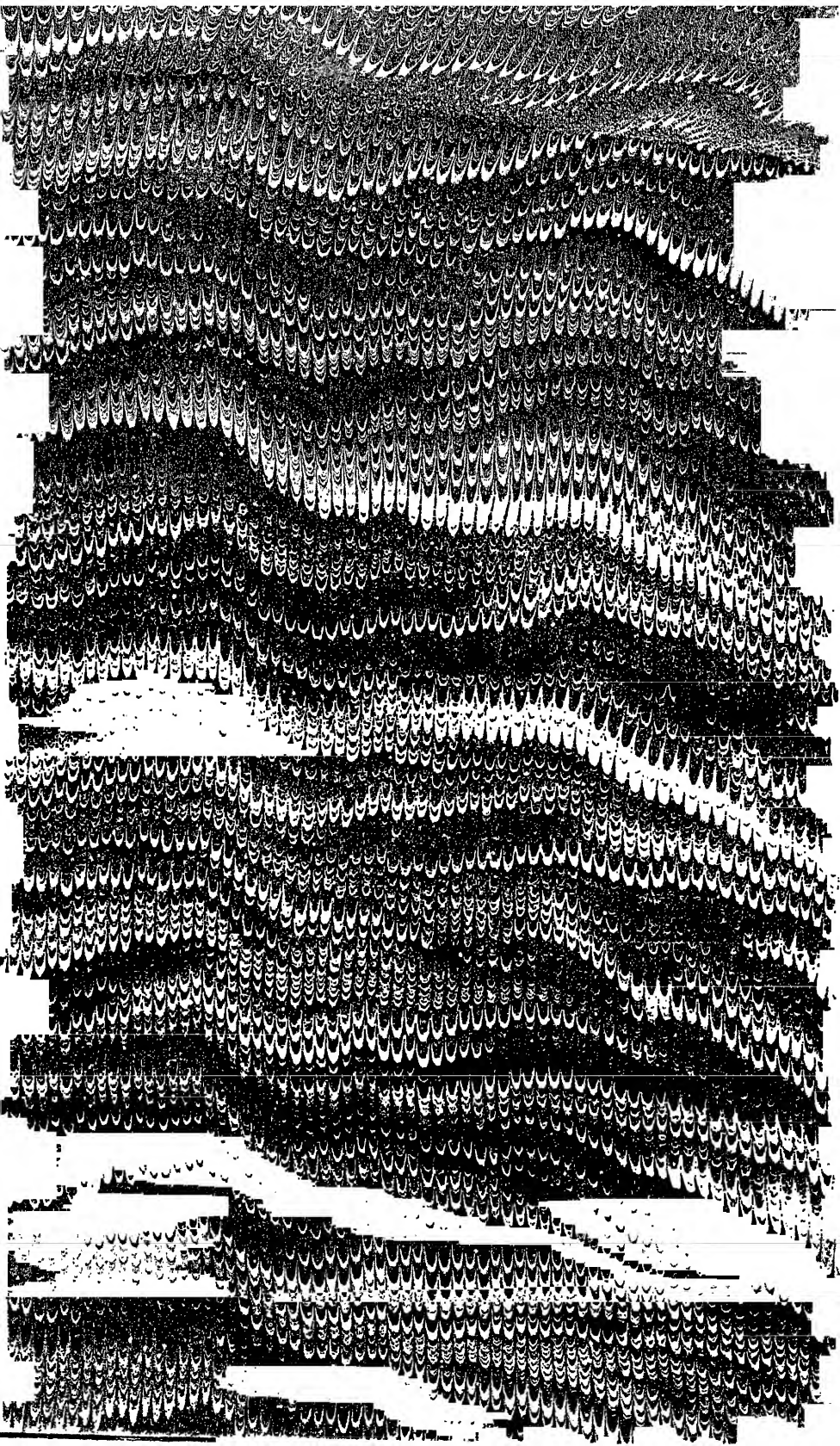
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